

# **TM 9-2320-427-10**

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## **TECHNICAL MANUAL OPERATOR'S MANUAL FOR**

### **TRUCK, TRACTOR, 8X8 M1070 A1 NSN 2320-01-564-6882**



**DISTRIBUTION STATEMENT A** - Approved for public release; distribution is unlimited.

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**HEADQUARTERS, DEPARTMENT OF THE ARMY  
JANUARY 2011**





## WARNING SUMMARY

### GENERAL SAFETY CAUTION/WARNING SUMMARY

- This list summarizes critical warnings. They are repeated here to let you know how important they are.
- Study these warnings carefully.
- They can save your life and the lives of personnel you work with.
- If there is any doubt about handling tools, materials, equipment, and procedures, see TB 43-0216, Safety and Hazard Warnings for Operation and Maintenance of TACOM Equipment.

**FOR INFORMATION ON FIRST AID: Reference FM 4-25.11. (WP 0136)**

### EXPLANATION OF WARNING ICONS



**BIOLOGICAL** - Abstract symbol bug shows that a material may contain bacteria or viruses that present a danger to life or health.



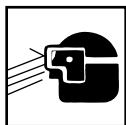
**CHEMICAL** - Drops of liquid on hand show that the material will cause burns or irritation to human skin or tissue.



**EAR PROTECTION** - Headphones over ears show that noise level will harm ears.



**ELECTRICAL** - Electrical wire to arm with electricity symbol running through human body shows that shock hazard is present.



**EYE PROTECTION** - Person with goggles shows that the material will injure the eyes.

## WARNING SUMMARY - Continued

### EXPLANATION OF WARNING ICONS - Continued



**EXPLOSION** - Rapidly expanding symbol shows that the material may explode if subjected to high temperatures, sources of ignition, or high pressure.



**FIRE** - Flame shows that material may ignite and cause burns.



**HEAVY OBJECT** - Human figure stooping over heavy object shows physical injury potential for improper lifting technique, and/or the aid of an assistant(s) and/or lifting device (as required).



**HEAVY PARTS** - Hand with heavy object on top shows that heavy parts can crush and harm.



**HEAVY PARTS** - Foot with heavy object on top shows that heavy parts can crush and harm.



**HEAVY PARTS** - Heavy object on human figure shows that heavy parts present a danger to life or limb.



**HEAVY PARTS** - Moving heavy object pinning human figure against stationary object shows that heavy, moving parts/objects present a danger to life or limb.



**HOT AREA** - Hand over object radiating heats shows that part is hot and can burn.

## WARNING SUMMARY - Continued

### EXPLANATION OF WARNING ICONS - Continued



**MOVING PARTS** - Hand with fingers caught between gears shows that the moving parts of the equipment present a danger to life or limb.



**RADIATION** - Three circular wedges show that the material emits radioactive energy and can injure human tissue.



**SHARP OBJECT** - Pointed object in hand shows that a sharp object presents a danger to life or limb.



**SLICK FLOOR** - Wavy line on floor with legs prone shows that slick floor presents a danger of falling.



**VAPOR** - Human figure in a cloud shows that material vapors present a danger to life or health.

### LIST OF CRITICAL WARNINGS

## WARNING

### MODIFICATION HAZARD

- Unauthorized modifications to, alterations to, or installations on this equipment are prohibited and are in violation of AR 750-10.
- Failure to comply may result in injury or death to personnel or damage to equipment.

## WARNING SUMMARY - Continued

### WARNING



#### **CARBON MONOXIDE (EXHAUST GAS) CAN CAUSE DEATH**

- Carbon monoxide is in exhaust fumes of fuel-burning heaters and internal combustion engines.
- Carbon monoxide does not have color or smell and can cause death. Breathing air with carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, a sleepy feeling and coma. Permanent BRAIN DAMAGE or DEATH can result from heavy exposure.
- Carbon monoxide can become dangerously concentrated under conditions of no ventilation.
- The following precautions **MUST** be followed to ensure personnel are safe whenever personnel heater or main or auxiliary engine is operated for any purpose:
  - DO NOT operate personnel heater or engine of vehicle in enclosed area without adequate ventilation. Failure to comply may result in injury or death to personnel.
  - DO NOT idle engine for long periods without ventilator blower operation. If tactical situation permits, open hatches.
  - DO NOT drive any vehicle with inspection plates, cover plates, or engine compartment covers removed unless necessary for maintenance purposes. Failure to comply may result in injury or death to personnel.
  - NEVER sleep in a vehicle when the heater is operating or the engine is idling.
  - BE AWARE that the gas particulate filter unit or the field protection mask for Chemical, Biological, Radiological, and Nuclear (CBRN) protection **WILL NOT** offer safety from carbon monoxide poisoning.
- BE ALERT at all times during vehicle operation for exhaust odors and exposure symptoms. If either odor or exposure symptoms are present, **IMMEDIATELY EVACUATE AND VENTILATE** the area. Affected personnel treatment shall be: expose to fresh air; keep warm; DO NOT PERMIT PHYSICAL EXERCISE; if necessary, give

## WARNING SUMMARY - Continued

artificial respiration as described in FM 4-25.11 and get immediate medical attention. Failure to comply may result in injury or death to personnel.

- **THE BEST DEFENSE AGAINST CARBON MONOXIDE POISONING IS GOOD VENTILATION.**

### WARNING

#### HIGH-PRESSURE HYDRAULIC SYSTEM

- Hydraulic systems can cause serious injuries if high-pressure lines or equipment fail.
- Never work on hydraulic systems or equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and can give first aid.
- Never disconnect any hydraulic hose or part while the engine is running. Allow several minutes to elapse after shutting off engine, to allow pressure to relieve itself, before attempting to remove hoses. Failure to comply may result in injury to personnel.
- The HET vehicles contain hydraulic systems operating at oil pressures up to 3,000 psi (20 685 kPa). Never disconnect any hydraulic line or fitting without first dropping the pressure to zero. Failure to comply may result in serious injury or death to personnel.

### WARNING



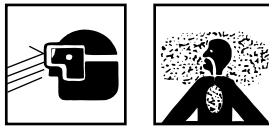
#### ELECTRICAL SYSTEM

- Remove all jewelry, such as rings, ID tags, bracelets, etc. If jewelry or tools contact electrical circuits, a direct short may result. Failure to comply may result in serious injury or death to personnel.
- Do not smoke, use open flame, make sparks or other ignition sources around batteries. A battery giving off gas could explode. Failure to comply may result in serious injury or death to personnel.

## WARNING SUMMARY - Continued

- Be careful when working on or with electrical equipment. Do not be misled by the term "low voltage." Voltages as low as 50 volts can cause death. For artificial respiration, refer to FM 4-25.11.
- When working inside the vehicle with power off, be sure to ground every capacitor likely to hold a dangerous voltage potential.
- Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment.

### WARNING



### SOLVENT CLEANING COMPOUND

- Solvent cleaning compound MIL-PRF-680 Type II and III may be irritating to the eyes and skin. Use protective gloves and goggles. Use in a well-ventilated area. Use respirator as needed.
- Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal:
  - First aid for ingestion: do not induce vomiting. Seek immediate medical attention.
  - First aid of skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention.
  - First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention.
  - First aid for inhalation: move to fresh air. If symptoms persist, seek medical attention.
  - If not breathing, provide artificial respiration. Seek immediate medical attention.
- The flashpoint for Type II solvent cleaning compound is 141 to 198°F (61 to 92°C), and Type III is 200 to 241°F (93 to 116°C):
  - Keep away from open flames and other sources of ignition. Failure to comply may result in injury or death to personnel.

## WARNING SUMMARY - Continued

- Fire extinguishers should be placed nearby when using solvent cleaning compound. Failure to follow this warning may result in injury or death.
- Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment:
  - Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.
  - Cloths or rags saturated with solvent cleaning compound must be disposed of IAW authorized facilities' procedures. Failure to follow this warning may result in injury.

### WARNING



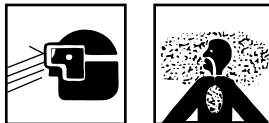
### POLYURETHANE COATING (CARC)

- Eye and hearing protection must be worn at all times when using power tools for grinding, cutting, sawing, or drilling. Failure to do so may result in injury to personnel.
- Chemical Agent Resistant Coating (CARC) paint contains isocyanate, which is highly irritating to skin and respiratory system. High concentrations of isocyanate can produce symptoms of itching and reddening of skin, a burning sensation in the throat and nose, and watering of the eyes. In extreme concentrations, isocyanate can cause cough, shortness of breath, pain during respiration, increased sputum production, and chest tightness:
  - First aid for ingestion: do not induce vomiting. Seek immediate medical attention.
  - First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention.
  - First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention.
  - First aid for inhalation: move to fresh air. If symptoms persist, seek medical attention.
  - If not breathing, provide artificial respiration. Seek immediate medical attention.

## WARNING SUMMARY - Continued

- The following precautions must be taken whenever using CARC paint or performing maintenance on components protected with CARC paint:
  - Protective equipment (gloves, goggles, ventilation mask) must be worn when using CARC paint.
  - NEVER cut CARC-coated materials without high-efficiency, air-purifying respirators in use.
  - DO NOT grind or sand painted equipment without high-efficiency, air-purifying respirators in use.
  - BE AWARE of CARC paint exposure symptoms; symptoms can occur a few days after initial exposure. Seek medical help immediately if symptoms are detected.
  - Use only in well-ventilated area. Check with local environmental office for methods and locations approved for painting in accordance with local and state environmental regulations.
  - Always use air line respirators when using CARC paint unless air sampling shows exposure to be below standards. Use chemical cartridge respirator if air sampling is below standards.

### WARNING



### ADHESIVE

- Adhesive, solvents and sealing compounds can burn easily and are harmful, causing immediate bonding on contact with eyes, skin, or clothing, and give off harmful vapors.
- If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.
- If adhesive gets in your eyes, try to keep them open; flush them with water for 15 minutes and get immediate medical attention.
- Wear protective goggles and use in a well-ventilated area.
- Keep away from open fire and use in well-ventilated area to avoid injury or death.



## WARNING SUMMARY - Continued

### WARNING

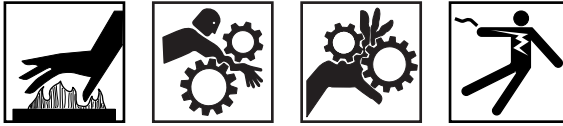


#### FLAMMABLE LIQUID AND COMBUSTIBLE VAPOR

- Gasoline, fuel oil, lubricating oil, grease, paint, paint thinner, cleaning solvents, and other combustible liquids present a serious fire hazard.
- Combustible liquids must ALWAYS be stored in their approved containers and designated compartments or deck storage locations.
- Ensure exhaust and ventilation fans are operating while using cleaning solvents, or paint products.
- Never store or charge batteries in a confined space without ventilation, or near electrical equipment.
- Fuel is very flammable and can explode easily.
- To avoid serious injury or death, keep fuel away from open flame and keep fire extinguisher within easy reach when working with fuel.
- Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine.
- When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE.
- Starting fluid is toxic and flammable. Do not store in cab and do not breathe fumes. Do not puncture or burn containers. Dispose of container following manufacturer's recommendations on the container.
- Never use fuel to clean parts. Fuel is highly flammable. Serious personnel injury could result if fuel ignites during cleaning.
- Ether is very flammable and could explode causing serious injury or death. Keep ether cylinders away from heat and open flame.
- Fuel and oil are slippery and can cause falls. To avoid injury, wipe up spilled fuel or oil with rags.

## WARNING SUMMARY - Continued

### WARNING



#### MOVING MACHINERY

- Use extreme care when operating or working near moving machinery, including running engine, rotating shafts, and other moving parts. Failure to comply may result in injury or death to personnel.
- Use extreme care when measuring voltage while engine is running around rotating fan blade and hot engine parts. Failure to comply may result in injury or death to personnel.

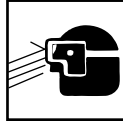
### WARNING

#### HEAVY-DUTY WINCH OPERATION

- Avoid quick, jerking winch operation. All personnel must stand clear during winching operations from possible snapping cable or shifting load. Failure to comply may result in injury or death to personnel.
- When hooking up for winching operations, position throat (open part) of hook upward in case overloading straightens out hook. Failure to comply may result in injury or death to personnel.
- The cable drum requires a minimum of five wraps of wire rope (cable) for safety. Failure to comply may result in injury or death to personnel.
- Be careful when handling the winch cable. Ensure cut ends are taped. Ensure cut ends of cable on winch assembly are securely fastened down. Failure to comply may result in injury or death to personnel.
- Always wear leather gloves when handling winch cable. Failure to comply may result in injury or death to personnel.

## WARNING SUMMARY - Continued

### WARNING



#### PARTS UNDER PRESSURE

- Wear safety goggles and use caution when removing or installing springs, snap rings, retaining rings, and other parts under spring tension. These parts can act as projectiles. Failure to comply may result in injury or death to personnel.
- The radiator is very hot and pressurized during vehicle operation. Let radiator cool before removing cap. Failure to do so can result in serious burns.
- During pressure tests, ensure air pressure is drained to 0 psi (0 kPa) before taking off any components. If pressure is not released, plates or line could blow off and harm personnel. Do not drain air from tank with any part of body in air spray path. Skin embolisms and/or debris in eyes can occur from released pressure.
- High air pressure may be released from valve stem when valve core is removed. Stay clear of valve stem after core is removed. Ensure all personnel wear suitable eye protection. Failure to comply may result in injury to personnel.
- Stand clear of trajectory area during deflation or personal injury or death may result.
- Lock-ring is under tension. If lock-ring breaks loose it could cause injury to personnel. Keep hands and fingers away from lock-ring when removing.
- Never adjust relief valve so that personnel must stand on strongback to operate latch.
- If there is any residual pressure in tank when relief valve is open, personnel may lose their balance and fall. Failure to comply may result in injury or death to personnel.
- Use extreme care when removing or installing spring retainers. Spring retainers are under tension and can act as projectiles when released suddenly. Ensure proper eye protection is worn to prevent injury to personnel.

## **WARNING SUMMARY - Continued**

- Use extreme care when removing or installing springs. Springs are under tension and can act as projectiles when released. Ensure proper eye protection is worn to prevent injury to personnel. Eye protection is required during all grinding operations. Failure to comply may result in serious injury to personnel.
- Failure to relieve tank pressure may result in sudden, unexpected loss of pressure. Failure to comply may result in personal injury or death.
- Do not remove the radiator cap when the engine is hot, as steam and hot coolant can escape. Failure to comply may result in personal injury or death.

### **WARNING**



### **HEAVY PARTS**

- Any part or component that weighs over 50 lbs (23 kg) must be removed with the aid of an assistant and a lifting device. Failure to comply may result in personal injury or death.
- Utility chains are heavy and difficult to handle. Two personnel are required when handling utility chains. Failure to comply may result in injury to personnel.

### **WARNING**

### **EXTREME HEAT**

If required to remain inside the vehicle during extreme heat, occupants should follow the water intake, work/rest cycle, and other heat stress preventive medicine measures contained in FM 21-10, Field Hygiene and Sanitation.

## WARNING SUMMARY - Continued

### WARNING

#### CABLES

- Always wear heavy gloves when handling winch cables; never let cable run through hands. Frayed cables can cut. Failure to comply may result in injury or death to personnel.
- Never operate winch with less than five wraps of cable on winch drum. Frayed cables can cut. Failure to comply may result in injury or death to personnel.

### WARNING



#### LEAD-ACID BATTERIES

- Wear proper eye protection when working around batteries. Failure to comply may result in injury or death to personnel.
- Use extreme care not to short out battery terminals. Remove all jewelry such as rings, ID tags, bracelets, etc. prior to working on or around vehicle. Jewelry and tools can catch on equipment, contact positive electrical circuits, and cause a direct short, severe burns, or electrical shock. Failure to comply may result in injury or death to personnel.
- Batteries produce explosive gases. Do not smoke or use open flame near batteries. Do not allow hot, sparking, or glowing objects near batteries. If batteries are giving off gases, presence of a heat, flame, or spark may cause fire and/or explosion. Failure to comply may result in injury or death to personnel.
- Battery electrolyte is harmful to skin and eyes. Avoid battery electrolyte contact with skin, eyes, or clothing. If battery electrolyte spills, take immediate action to stop burning effects:

## WARNING SUMMARY - Continued

- External - If battery electrolyte contacts skin, immediately flush effected area with cold running water to remove all acid. Failure to comply may result in injury or death to personnel.
- Eyes - Immediately flush eyes with cold water for 15 minutes and seek immediate medical attention. IMPORTANT - If only one eye is affected, ensure the affected eye is always (during both flushing and transport) kept lower (the lower the better) than unaffected eye. This will help keep affected eye from draining into (and contaminating) the unaffected eye. Failure to comply may result in injury or death to personnel.
- Internal - Drink large amounts of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil and seek immediate medical attention. Failure to comply may result in injury or death to personnel.
- Clothing or vehicle - Immediately flush area with cold water and neutralize battery electrolyte with baking soda or household ammonia solution. Failure to comply may result in injury or death to personnel.

### WARNING



### CBRN

- CBRN-contaminated air filters must be handled and disposed of only by authorized and trained personnel.
- The unit commander or senior officer in charge of maintenance personnel must ensure that prescribed protective clothing (FM 3-11.4) is used, and prescribed safety measures and decontamination procedures (FM 3-11.5) are followed.
- The local unit SOP is responsible for final disposal of contaminated air filters. Failure to comply may cause severe injury or death to personnel.

## **WARNING SUMMARY - Continued**

### **WARNING**

#### **TIRE OPERATION**

- Operating a vehicle with a tire in an overinflated or underinflated condition, or with a questionable defect, may lead to premature tire failure. Ensure tire has proper tire pressure. Failure to comply may result in injury or death to personnel.
- When inflating tires mounted on the vehicle, all personnel must remain out of trajectory of the side ring and lock-ring as shown by the areas indicated. Failure to follow proper procedures may result in serious injury or death to personnel.
- Cracked, broken, bent or otherwise damaged rim components shall not be reworked, welded, brazed, or otherwise heated or damage or personal injury or death may result.
- No heat shall be applied to a multi-piece wheel or wheel component or damage or injury or death may result.
- Failure to place wheel/tire assembly in safety cage prior to initial inflation could result in serious injury or death to personnel.
- When a wheel/tire is in a restraining device, do not rest or lean any part of body or equipment on or against the restraining device, or injury or death could result.
- While changing tires or while performing tire maintenance, stay out of the trajectory path. Failure to comply may result in injury or death to personnel.
- Always use an inflation hose with an in-line gauge and a clip-on chuck when inflating tires. The gauge and valve must be mounted a minimum of 10 feet (3.10 m) away from air chuck.
- High air pressure may be released from valve stem when valve core is removed. Stay clear of valve stem after core is removed. Ensure all personnel wear suitable eye protection. Failure to comply may result in injury to personnel.
- Tire is heavy. Brace tire to ensure tire will not fall over on you or on others.

## **WARNING SUMMARY - Continued**

### **WARNING**

#### **VEHICLE OPERATION**

- Speed limits posted on curves reflect speeds that are considered safe for automobiles. Heavy vehicles with a high center of gravity can roll over at these speed limits. Use caution and reduce your speed below the posted limit before entering a curve. Failure to comply may result in vehicle crash and injury to personnel.
- Use caution and reduce your speed below the posted limit before entering a curve. Failure to comply may result in vehicle crash and injury to personnel.
- Always use seatbelts when operating vehicle. Failure to use seatbelt can result in serious injury or death in case of accident.
- Operation at speeds over 15 mph (24 kph) on paved roads can be achieved when the operator determines that the vehicle being towed and the terrain allow safe operation.
- Under no condition can speeds over 35 mph (55 kph) on paved road and 15 mph (24 kph) off-road be allowed. Loss of control can cause serious injury or death. Excessive speed can cause damage to vehicle being towed.

### **WARNING**

#### **BRAKES**

- Ensure all personnel are clear from front of vehicle before performing brake stall check. Be ready to apply service brake. Operator must remain in cab while performing this check. Failure to comply could result in personnel injury.
- Never use parking brake for normal braking or wheels will lock up causing severe skid. Skidding vehicle may result in serious personal injury or death.
- Do not use trailer brakes as a parking brake. Trailer brakes may not hold loaded vehicle and trailer on a grade. A runaway vehicle may cause severe personal injury or death.
- Engine must be shut OFF and parking brake set before performing PMCS walk around. Failure to comply may result in injury or death to personnel.



## WARNING SUMMARY - Continued

### WARNING



### BURNS

The exhaust pipe and muffler can become very hot during vehicle operation. Be careful not to touch these parts with bare hands, or allow body to come in contact with exhaust pipe or muffler. Exhaust system parts can become hot enough to cause serious burns.

### WARNING

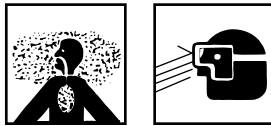


### HEARING PROTECTION

- Excessive noise levels are present any time the heavy-duty winch or crane is operating.
- Wear single hearing protection (earplugs or equivalent) while working around equipment while it is running. Failure to do so could result in damage to your hearing.
- Personnel hearing can be PERMANENTLY DAMAGED if exposed to constant high noise levels of 85 dB (A) or greater. Wear approved hearing protection devices when working in high noise level areas. Personnel exposed to high noise levels shall participate in a hearing conservation program in accordance with DA PAM 40-501. Hearing loss occurs gradually but becomes permanent over time.

## WARNING SUMMARY - Continued

### WARNING



#### COMPRESSED AIR

- Brake shoes may be coated with dust. Breathing this dust may be harmful to your health.
- Do not use compressed air to clean brake shoes. Wear a filter mask approved for use against brake dust. Failure to comply may result in injury or death to personnel.
- Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa).
- Use only with effective chip guarding and personal protective equipment, goggles, shield, and gloves.
- Steam cleaning creates hazardous noise levels and severe burn potential. Eye, skin, and ear protection is required. Failure to comply may result in injury to personnel.
- Face shield must be used by personnel operating spray gun. Failure to comply may result in injury to personnel.

### WARNING



#### ENGINE/TRANSMISSION COMPONENTS

- Ensure engine is cool before performing maintenance. Failure to comply may result in severe burns.
- Use caution when draining hot oil. Oil may burn exposed skin and cause injury to personnel. If injured, seek medical attention immediately.
- Never use magnetic plug in center of engine oil pan to drain oil. Failure to comply may result in injury to personnel and could cause oil to drain on vehicle components.

## WARNING SUMMARY - Continued

- When working on a running engine, use caution around rotating parts. Tools, clothing, and hands may get caught causing serious injury or death to personnel.
- Use caution when working near hood mounting bracket that extends beyond firewall. Failure to comply may result in injury to personnel.
- Parking brake must be applied, with transmission range selector and transfer case in neutral before starting DDR cylinder cutout test. Failure to comply may result in vehicle moving unexpectedly and injury to personnel.

### WARNING



### HAZARDOUS WASTE

- When servicing this vehicle, performing maintenance, or disposing of materials such as engine coolant, transmission fluid, lubricants, batteries, battery acid or CARC paint, consult your Unit/local hazardous waste disposal center or safety office for local regulatory guidance. If further information is needed, please contact the Army environmental hotline at 1-800-872-3845. Improper disposal of this material may result in damage to environment or injury to personnel.



## LIST OF EFFECTIVE PAGES/WORK PACKAGES

NOTE: Zero in the "Change No." column indicates an original page or work package.

Date of issue for the original manual is:

Original 31 JANUARY 2011

**TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 86 AND  
TOTAL NUMBER OF WORK PACKAGES IS 140, CONSISTING OF THE  
FOLLOWING:**

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Warning Summary	0	WP 0023 (4 pages)	0
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Chapter 1 - General	0	WP 0025 (4 pages)	0
Information, Equipment		WP 0026 (16 pages)	0
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Operation		WP 0028 (12 pages)	0
WP 0001 (16 pages)	0	WP 0029 (2 pages)	0
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HEADQUARTERS  
DEPARTMENT OF THE ARMY  
WASHINGTON, D.C., 31 JANUARY 2011

TECHNICAL MANUAL  
OPERATOR'S MANUAL  
FOR  
TRUCK, TRACTOR, 8X8  
M1070 A1  
NSN 2320-01-564-6882

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## HOW TO USE THIS MANUAL

### USABLE ON CODE (UOC) INFORMATION

Usable On Code (UOC) - the user should be aware that the BASE model M1070 Heavy Equipment Transporter vehicle UOC is "HA1". Dependent on the format used for printing this manual, the user may or may not see instructions printed in this manual stating what information is applicable to which model HET series vehicle by UOC.

### WARNINGS, CAUTIONS, AND NOTES

Read all WARNINGS, CAUTIONS, AND NOTES before performing any procedure.

Warnings, cautions, notes, subject headings, and other essential information are printed in **BOLD** type, making them easier for the user to see.

### GENERAL INFORMATION

This manual is designed to help operate and maintain the Heavy Equipment Transporter (HET). Listed below are some features included in this manual to help locate and use the required information:

- Chapter 1 of this manual includes HET series vehicle general information, theory of operation, differences between models, etc.
- Chapter 2 of this manual provides operating procedures and operator Preventive Maintenance Checks and Services (PMCS) for both the HET series vehicle, and its accompanying operating systems.
- Chapter 3 of this manual provides operator troubleshooting procedures for both the HET series vehicle and its accompanying operating systems.

In addition to text, there are illustrations showing:

1. Components, controls, and indicators.
2. How to take a component off, and put it back on.
3. Cleaning and inspection criteria are also listed when necessary.



## **CHAPTER 1**

# **GENERAL INFORMATION, EQUIPMENT DESCRIPTION, AND THEORY OF OPERATION**





OPERATOR MAINTENANCE  
INTRODUCTION

SCOPE

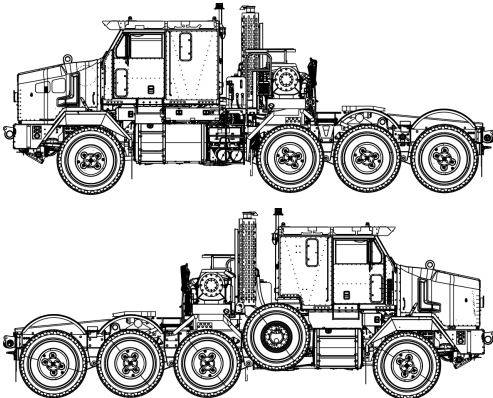
This manual is used for operation and operator-performed maintenance of Heavy Equipment Transporter (HET) Tractor:

**Name and Model:** Truck, Tractor, M1070 A1, 8 X 8, Heavy Equipment Transporter (HET).

**Purpose of Equipment:** HET Tractor and the M1000 Trailer form the Heavy Equipment Transport System (HETS). HETS is used to load, unload, and transport the M1 Series Main Battle Tank (MBT) during administrative and tactical operations.

**Special Inclusions:** A Stowage and Sign Guide (WP 0085) and On-Vehicle Equipment Loading Plan (WP 0140) are included with this manual.

Table 1. Overview.

VEHICLE	DESCRIPTION
 <p>Figure 1. M1070 A1, TRUCK TRACTOR, 8 X 8, Heavy Equipment Transporter (HET).</p>	<p>Tractor vehicle weighs 96,169 lb. (43 661 kg) GVWR, and 250,911 lb. (113 914 kg) GCWR (refer to Equipment Data (WP 0006) in the General Information section of this manual for more information on weights and dimensions). Vehicle is equipped with fifth wheel, 3.5 in. (8.9 cm) kingpin, two 55,000 lb. (24 970 kg) capacity recovery winches, and a 3,000 lb. (1 361 kg) capacity auxiliary winch.</p>

MAINTENANCE FORMS AND RECORDS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by (WP 0136), The Army Maintenance Management System (TAMMS) Users Manual.

## **EQUIPMENT IMPROVEMENT REPORT AND MAINTENANCE DIGEST (EIR MD) AND QUALITY DEFICIENCY REPORTING (QDR).**

The quarterly (WP 0136) Equipment Improvement Report and Maintenance Digest contains valuable field information on equipment covered in this manual. Information in the (WP 0136) Equipment Improvement Report and Maintenance Digest is compiled from some of the Equipment Improvement Reports (EIR) that have been prepared on vehicles covered in this manual. Many of these articles result from comments, suggestions, and improvement recommendations that were submitted to the EIR program. (WP 0136) Equipment Improvement Report and Maintenance Digest contains information on equipment improvements, minor alterations, proposed Modification Work Orders (MWOs), warranties (if applicable), actions taken on some of the (WP 0136) (Recommended Changes to Publications), and advance information on proposed changes that may affect this manual. Refer to the (WP 0136) Equipment Improvement Report and Maintenance Digest periodically for the most current and authoritative information on the equipment. The information will help you do a better job and will advise of the latest changes to this manual. Also refer to (WP 0136), Consolidated Index of Army Publications and Blank Forms at <http://www.army.mil/usapa/2530.html>, and reference section (WP 0136) of this manual. If you have a change recommendation to this manual, submit a (WP 0136) (Recommended Changes to Publications) via e-mail to: [ROCK-TACOM-TECH-PUBS@conus.army.mil](mailto:ROCK-TACOM-TECH-PUBS@conus.army.mil).

You can help improve this publication. If you find any errors, or if you would like to recommend any improvements to the procedures in this publication, please let us know. The preferred method is to submit your (WP 0136) (Recommended Changes to Publications and Blank Forms) through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is <https://aeps.ria.army.mil>. The (WP 0136) is located under the Public Applications section in the AEPS Public Home Page. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the (WP 0136) program. You may also mail, e-mail, or fax your comments or DA Form 2028 directly to the U.S. Army TACOM Life Cycle Management Command. The postal mail address is U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LC-LMPP / TECH PUBS, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. The e-mail address is [tacomlcmc.daform2028@us.army.mil](mailto:tacomlcmc.daform2028@us.army.mil). The fax number is DSN 793-0726 or Commercial (309) 782-0726.

## **HAND RECEIPT (HR) INFORMATION**

The (WP 0136) is a companion document to this manual which consists of preprinted hand receipts (WP 0136) that list end item related equipment (COEI, BII (WP 0137), and AAL (WP 0138)) which must be accounted for. As an aid to property accountability, additional Hand Receipt (-HR) Manuals may be requisitioned from the following source in accordance with procedures in (WP 0136), Consolidated Index of Army Publications and Blank Forms; Commander US Army Distribution Operation Facility, 1655 Woodson Road, St Louis, MO 63114-6181.

**CORROSION PREVENTION AND CONTROL**

Corrosion prevention and control (CPC) of Army material is a continuing concern. It is important that any corrosion problems be reported so they can be corrected and improvements can be made to prevent problems in the future. While corrosion is typically associated with the rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem.

If a corrosion problem is identified, it can be reported using (WP 0136). The use of key words, such as corrosion, rust, deterioration, and cracking will ensure that the information is identified as a CPC problem.

**DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE**

Procedures for the destruction of Army materiel to prevent enemy use are contained in (WP 0136).

**PREPARATION FOR STORAGE OR SHIPMENT**

Contact Field Level Maintenance for information on preparing the HET Tractor for storage or transportation/shipment.

**WARRANTY INFORMATION**

The HET Tractor is warranted by Oshkosh Corporation for 12 months; 4 months additional if placed in storage. The warranty starts on the date found in block 23 of (WP 0136) in the vehicle logbook. Report all defects in material or workmanship to the supervisor, who will take appropriate action through the field level maintenance shop. Report all defects in material or workmanship to the supervisor, who will take the appropriate action. For complete information covering this warranty, refer to Warranty Program in the general information section of this manual.

**NOMENCLATURE CROSS-REFERENCE LIST**

*Table 2. Common Nomenclature.*

COMMON NAME	OFFICIAL NOMENCLATURE
Brake Pedal	Service Brake Pedal
Cable	Wire Rope
Cold Start System	Ether Quick-Start System
Engine Coolant	Antifreeze, Ethylene Glycol Mixture

**NOMENCLATURE CROSS-REFERENCE LIST - Continued*****Table 2. Common Nomenclature - Continued.***

<b>COMMON NAME</b>	<b>OFFICIAL NOMENCLATURE</b>
Gladhand	Quick Disconnect Coupling
HET Tractor	Truck, Tractor, M1070 A1, 8X8, Heavy Equipment Transporter (HET)
High Idle Switch	Engine Speed Control Switch
Jake Brake, Jacobs® Brake	Engine Retarder, Engine Brake
O-Ring	Preformed Packing
Three Rear Axles	Tridem Axles

**LIST OF ABBREVIATIONS*****Table 3. Abbreviations.***

<b>ABBREVIATION</b>	<b>OFFICIAL NOMENCLATURE</b>
AAL	Additional Authorization List
ABS	Anti-Lock Braking System
AMDF	Army Master Data File
amp	Ampere
bar	Barometric Pressure
BII	Basic Issue Items
BL	Bottom Load
BOI	Basis of Issue
C	Celsius
CAGEC	Commercial And Government Entity Code

**LIST OF ABBREVIATIONS - Continued*****Table 3. Abbreviations - Continued.***

<b>ABBREVIATION</b>	<b>OFFICIAL NOMENCLATURE</b>
CARC	Chemical Agent Resistant Coating
CBRN	Chemical, Biological, Radiological, and Nuclear
CCA	Cold Cranking Amperes
CHU	Container Handling Unit
CID	Cubic Inch Displacement
CKT	Circuit
cm	Centimeter
COEI	Components of End Item
CTIS	Central Tire Inflation System
CPC	Corrosion Prevention Control
CTA	Common Table of Allowance
cu. in.	Cubic Inch
DA	Department of the Army
dia.	Diameter
DS	Direct Support
ECU	Electronic Control Unit
EIR	Equipment Improvement Recommendations
ETM	Electronic Technical Manual
F	Fahrenheit

**LIST OF ABBREVIATIONS - Continued*****Table 3. Abbreviations - Continued.***

<b>ABBREVIATION</b>	<b>OFFICIAL NOMENCLATURE</b>
FHTV	Family of Heavy Tactical Vehicles
fl. oz.	Fluid Ounce
FRS	Forward Repair System
ft.	Foot
GAA	Grease, Automotive, and Artillery
gal	Gallon
GAWR	Gross Axle Weight Rating
GCWR	Gross Combination Weight Rating
GO	Gear Oil
GPFU	Gas Particulate Filter Unit
gpm	Gallons Per Minute
GS	General Support
GVWR	Gross Vehicle Weight Rating
HD	Heavy Duty
HDI	Hexamethylene Diisocyanate
HET	Heavy Equipment Transporter
HETS	Heavy Equipment Transport System
hp	Horsepower
HVAC	Heating, Ventilation, and Air Conditioning
I.D.	Inside Diameter

**LIST OF ABBREVIATIONS - Continued*****Table 3. Abbreviations - Continued.***

<b>ABBREVIATION</b>	<b>OFFICIAL NOMENCLATURE</b>
in.	Inch
ISO	International Standards Organization
JTA	Joint Table of Allowances
kg	Kilogram
km	Kilometer
Kmh or km/h	Kilometer per Hour
kPa	Kilopascals
kw	Kilowatt
L	Liter
lb.	Pound
lb-ft	Pound-Foot
lb-in	Pound-Inch
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LH	Left-Hand
M	Meter
MAC	Maintenance Allocation Chart
MBT	Main Battle Tank
mi	Mile
ml	Milliliter

**LIST OF ABBREVIATIONS - Continued*****Table 3. Abbreviations - Continued.***

<b>ABBREVIATION</b>	<b>OFFICIAL NOMENCLATURE</b>
MLC	Military Load Class
mm	Millimeter
mph	Miles Per Hour
MTOE	Modified Tables of Organization and Equipment
NIIN	National Item Identification Number
N·m	Newton Meter
NOC	Not Usable-On Code
NSN	National Stock Number
O.D.	Outside Diameter
OEA	Oil, Engine, Arctic
OE/HDO	Oil, Engine/Hydraulic Oil
OSK	Oshkosh Corporation
oz	Ounce
PMCS	Preventive Maintenance Checks and Services
psi	Pounds per Square Inch
pt.	Pint
PTO	Power Take-Off
qt.	Quart
Qty. Recm.	Quantity Recommended



**LIST OF ABBREVIATIONS - Continued*****Table 3. Abbreviations - Continued.***

<b>ABBREVIATION</b>	<b>OFFICIAL NOMENCLATURE</b>
Qty. Rqr.	Quantity Required
RFI	Radio-Frequency Interference
RH	Right-Hand
rpm	Revolutions Per Minute
RPSTL	Repair Parts and Special Tools List
SAE	Society of Automotive Engineers
SMR	Source, Maintenance, and Recoverability
SRA	Specialized Repair Activity
STE/ICE-R	Simplified Test Equipment/Internal Combustion Engine Reprogrammable
TAMMS	The Army Maintenance Management System
TCM	Transmission Control Module
TDA	Tables of Distribution and Allowance
TM	Technical Manual
TMDE	Test, Measuring, and Diagnostic Equipment
TOE	Tables of Organization and Equipment
u/m	Unit of Measure
UOC	Usable-On Code
VDC	Volts Direct Current

LIST OF ABBREVIATIONS - Continued

*Table 3. Abbreviations - Continued.*

ABBREVIATION	OFFICIAL NOMENCLATURE
XHD	Extra Heavy-Duty

**SAFETY, CARE, AND HANDLING**

Significant hazards and safety recommendations are listed in the Table 4 below.

**Table 4. Significant Hazards And Safety Recommendations.**

<b>OPERATING HAZARD</b>	<b>SAFETY RECOMMENDATION OR PRECAUTION</b>	<b>CONDITION (see NOTE below)</b>
Low oil pressure/high coolant temperature	Stop engine operation when STOP ENGINE indicator is illuminated and gauges indicate abnormal readings.	Abnormal
Low air pressure	Do not drive HET Tractor while low air pressure alarm is sounding or brake system failure (low air) indicator is illuminated (red).	Abnormal
Electric shock	Do not wear watches, rings, or other jewelry while working on or near an electrical circuit.	Abnormal
Refueling vehicle	<ul style="list-style-type: none"> <li>Fuel is very flammable and can explode easily.</li> <li>To avoid serious injury or death, keep fuel away from open flame and keep fire extinguisher (WP 0056) within easy reach when working with fuel.</li> <li>Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine.</li> <li>When working with fuel, post sign that says: NO SMOKING WITHIN 50 FEET OF VEHICLE.</li> </ul>	Normal
Connecting/Disconnecting trailer	<ul style="list-style-type: none"> <li>Ensure that position of assistant is known at all times.</li> <li>Ensure no one is standing directly behind tractor or trailer during connection/disconnection.</li> </ul>	Normal

**SAFETY, CARE, AND HANDLING - Continued**

**Table 4. Significant Hazards And Safety Recommendations - Continued.**

OPERATING HAZARD	SAFETY RECOMMENDATION OR PRECAUTION	CONDITION (see NOTE below)
Vehicle instability on a hill	Avoid driving diagonally across a hill. HET Tractor may roll, causing equipment damage and injury or death to personnel.	Normal
Winching operations	<ul style="list-style-type: none"> <li>• Do not use winches (WP 0058) for lifting personnel.</li> <li>• Always wear heavy gloves when handling winch cable.</li> <li>• Never let cable run through hands. Frayed cable can cut severely.</li> <li>• Do not operate winch without personnel guard in place.</li> <li>• Do not place hands or feet near winch during operation.</li> <li>• Ensure that both DRIVER SIDE WINCH KICKOUT control and PASSENGER SIDE WINCH KICKOUT control are disengaged prior to paying out winch cables. Failure to disengage KICKOUT controls may result in injury to personnel.</li> </ul>	Normal
<p style="text-align: center;"><b>NOTE</b></p> <p>Category of hazards as to whether or not they may be expected under normal or abnormal operating conditions.</p>		

## METRIC SYSTEM

The equipment described herein contains metric components and requires metric, common, and special tools. Therefore, metric units and English units will be used throughout this publication. A chart is supplied below to help convert these measurements.

### LINEAR MEASURE

- 1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
- 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
- 1 Kilometer = 1000 Meters = 0.621 miles

### SQUARE MEASURE

- 1 Sq Centimeter = 100 Sq Millimeter = 0.155 Sq Inches
- 1 Sq Meter = 10,000 Sq Centimeter = 10.76 Sq Feet
- 1 Sq Kilometer = 1,000,00 Sq Meters = 0.386 Sq Miles

### WEIGHTS

- 1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
- 1 Kilogram = 1000 Grams = 2.2 Lb
- 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

### CUBIC MEASURE

- 1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
- 1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

### LIQUID MEASURE

- 1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
- 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

### TEMPERATURE

- $5/9 (^{\circ}\text{F} - 32) = ^{\circ}\text{C}$
- 212° Fahrenheit is equivalent to 100° Celsius
- 90° Fahrenheit is equivalent to 32.2° Celsius
- 32° Fahrenheit is equivalent to 0° Celsius
- $9/5^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

**Table 5. Approximate Conversion Factors.**

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609

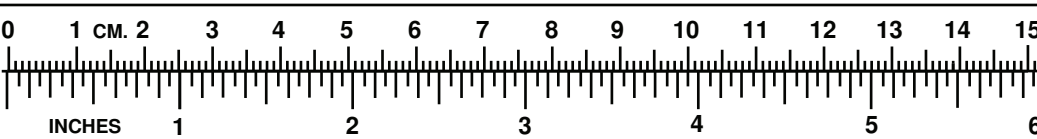
**METRIC SYSTEM - Continued**

***Table 5. Approximate Conversion Factors - Continued.***

<b>TO CHANGE</b>	<b>TO</b>	<b>MULTIPLY BY</b>
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Pounds per Square Inch	Bar	0.068948
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

METRIC SYSTEM - Continued

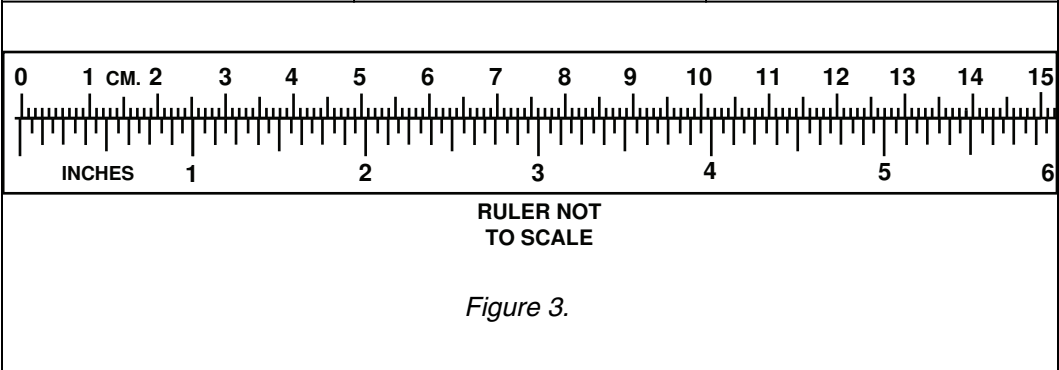
Table 5. Approximate Conversion Factors - Continued.

TO CHANGE	TO	MULTIPLY BY
 <p>RULER NOT TO SCALE</p> <p>Figure 2.</p>		
TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113

METRIC SYSTEM - Continued

Table 5. Approximate Conversion Factors - Continued.

TO CHANGE	TO	MULTIPLY BY
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Bar	Pounds per Square Inch	14.504
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



END OF WORK PACKAGE



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## **OPERATOR MAINTENANCE WARRANTY PROGRAM**

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### **GENERAL**

This work package provides implementation instructions for the warranty on the Truck, Tractor, M1070 A1. It contains instructions for obtaining services and/or supplies covered under warranty. This work package also describes methods of processing warranty claims. For additional warranty information on the Truck, Tractor, M1070 or any U.S. Army Tank-Automotive and Armaments Command (TACOM) equipment, contact your local Warranty Control Office/Officer (WARCO) or TACOM Logistics Assistance Representative (LAR). If your WARCO or TACOM LAR is not available, or if additional information is required, contact TACOM.

### **EXPLANATION OF TERMS:**

#### **Abuse**

The improper use, maintenance, repair or handling of warranted items that may cause the warranty of those items to become void (for example; not following service intervals or using the HET Tractor for other than what is intended).

#### **Acceptance**

The execution of the acceptance block and signing of (WP 0136) by the authorized Government representative, unless end items are placed in storage, in which case acceptance shall mean date of shipment from storage facility as reflected on (WP 0136) or (WP 0136).

#### **Acceptance Date**

The date an item of equipment is accepted into the Army's inventory by the execution of the acceptance block and signing of a (WP 0136) or approved acceptance document by an authorized representative of the Government.

#### **Contractor**

The supplier of equipment who enters into an agreement directly with the Government to furnish supplies.

#### **Correction**

The elimination of a defect.

---

**EXPLANATION OF TERMS: - Continued****Defect**

Any condition or characteristic in any supplies furnished by the contractor that does not otherwise function, or threatens not to function, as intended.

**Extended Warranty**

Warranty that is provided for assemblies/parts beyond the standard 12 months.

**Failure**

A part, component, or end item that fails to perform its intended use.

**Manufacturer's Recall****Safety Recall**

An item is recalled to repair or replace a defective part or assembly which may affect safety.

**Service Recall**

An item is recalled to repair or replace a defective part or assembly which does not affect the safe use of this item.

**Owning Unit**

The Army Unit authorized to operate, maintain, and use the equipment.

**Reimbursement**

A written provision in this warranty in which the Using/Support Unit may make the necessary repairs, with or without prior approval from the contractor, and the Government will be reimbursed for the repair parts and labor costs.

**Repair**

A maintenance action required to restore an item to serviceable condition without affecting the warranty.

**Supplies**

All spares required to maintain and repair the HET Tractor.

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**EXPLANATION OF TERMS: - Continued****Supporting Repair Facility**

The repair activity authorized to accomplish warrantable repairs at the appropriate level of maintenance identified in the Maintenance Allocation Chart (MAC).

**Warranty Control Office (WARCO)**

Serves as the intermediary between the troops owning the equipment and the local dealer, contractor, or manufacturer. All warranty claim actions will be processed through the WARCO.

**Warranty**

A written agreement between a contractor and the Government which outlines the rights and obligations of both parties for defective supplies.

**Warranty Claim**

Action started by the equipment user for warranty repair or reimbursement.

**Warranty Expiration Date**

The date the warranty is no longer valid. This date will be 13 months from the contractor shipment date. This warranty period covers the basic 12 months plus on additional month for shipping time.

**Warranty Period**

Time during which the warranty is in effect; normally measured as the maximum number of years, months, days, miles, or hours used.

**Warranty Start Date**

The day shipment is put into effect (Contractor Shipment Date).

**COVERAGES-SPECIFIC**

This work package applies to:

COVERAGES-SPECIFIC - Continued

Table 1. Vehicle Information.

Noun	Model	NSN	Cage
Truck, Tractor, Heavy Equipment Transporter (HET)	M1070 A1	2320-01-564-6882	45152
<p><b>NOTE</b></p> <p>The item is manufactured by Oshkosh Corporation (OSK), under contract #W56HZV-07-C-0248. Inquiries to OSK can be made by calling (920) 235-9151.</p>			

The contractor warrants the supplies are free from defects in design, material, and workmanship for a period of thirteen (13) months from warranty start date.

If a safety recall defect occurs during the HET Tractor warranty period, the contractor agrees to extend the terms of the warranty to the time required to make necessary safety defect corrections. Also, if the contractor or his supplier(s) provide a greater warranty for the supplies furnished, the contractor will provide the greater warranty to the Government.

If a defect/failure is caused by or falls within any of the following categories, it is not considered warrantable and a claim should not be initiated:

- 1. Misuse or negligence
- 2. Accidents
- 3. Improper operation
- 4. Improper storage
- 5. Improper transport
- 6. Improper or insufficient maintenance
- 7. Improper alterations or repairs
- 8. Defect/failure discovered or occurring after warranty expiration date
- 9. Fair wear and tear items (brake shoes, pads, armatures, brushes, etc.)

In addition to the 13 month warranty, the HET Tractors will be warranted for a total service life of 10 years including extended periods in a corrosion hazard military environment. During this 10 year service life, there will be no damage caused by corrosion requiring repair or replacement of parts. No actions beyond normal washing or replacement of accident-damaged paint shall be necessary to maintain the corrosive protection in place.

This 13 month warranty is extended up to nine (9) months from date of acceptance if the HET Tractor is put into government storage before use. In this case, the warranty starts

**COVERAGES-SPECIFIC - Continued**

when the HET Tractor is either taken out of storage or until nine (9) months from the warranty start date shown on the warranty data plate, whichever occurs first. Refer to preparation for storage.

**C-18 EURO III Engine Warranty**

Caterpillar warrants the C-18 EURO III engine for 12 months. Warranty start dates are recorded in Oshkosh Corporation's database. Report all engine defects or workmanship issues to your supervisor and Oshkosh Corporation, HET Warranty Manager. Contact Oshkosh Corporation at (920) 235-9151. When calling the HET Warranty Manager, please have the Vehicle Identification Number (VIN) available.

**4800SP Transmission Warranty**

Allison Transmission warrants the 4800SP transmission for 24 months. Warranty start dates are recorded in Oshkosh Corporation's database. Report all transmission defects or workmanship issues to your supervisor and Oshkosh Corporation, HET Warranty Manager. Contact Oshkosh Corporation at (920) 235-9151. When calling the HET Warranty Manager, please have the Vehicle Identification Number (VIN) available.

**CONTRACTOR RESPONSIBILITIES:**

When the owning unit has directed the contractor to correct the supplies, the contractor will furnish all material required to correct the defective supplies. Repairs and parts shall be initiated/provided within ten (10) working days after receipt of written claim notification. Furthermore, the contractor will provide a copy of the work order to owning unit upon completion of repair.

When the contractor receives written notification requiring contractor repair, they will have the option:

1. Correct the supplies in the field.
2. Return the HET Tractor or parts to the contractor's designated facility for correction.

When the contractor corrects the supplies, all labor involved shall be borne by the contractor. Additionally, the contractor shall arrange and bear all transportation costs of the supplies to its facility and return to user.

The contractor, within five (5) working days of receiving such notice, shall notify the warranty claimant by telephone as to the method of correction, date(s) work is to be performed, and by whom.

**GOVERNMENT RESPONSIBILITIES:**

The Major Subordinate Command for the HET is the U.S. Army Tank-Automotive and Armaments Command (TACOM), Warren, MI 48397-5000. TACOM is responsible for managing and implementing the warranty.

**TACOM Will:**

Insure the contractor performs in accordance to the terms of the contract.

**Equipment Owning Unit Will:**

1. Identify defects/failures and verify the defects/failures are warrantable.
2. Submit warranty claims, using (WP 0136) or (WP 0136) to your local Warranty Coordinator.
3. Tag and retain (IAW (WP 0136) and this work package) parts, pieces of parts and/or assemblies removed at the owning unit level and as a result of a warrantable defect/failure and/or correction.

**Supporting Repair Facility Will:**

1. Identify defects/failures as warrantable (if owning unit has not already identified them). Verify defects/failures are warrantable.
2. Review, process, and submit valid warranty claims to the local WARCO if the (WP 0136) or (WP 0136) is complete and correctly filled out.
3. Reject invalid warranty claims or request additional information for incomplete and incorrect claims.
4. Coordinate with the owning unit and decide which option for repair is desired to correct the warrantable defect/failure.
5. Depending on which repair option was chosen (Government or contract repair), provide labor/parts required to accomplish the warrantable repairs.
6. Tag and retain (IAW (WP 0136) and this work package) parts, pieces of parts and/or assemblies removed at the owning unit level as a result of a warrantable defect/failure and/or correction.

**Local WARCO Will:**

1. Verify, review, process, and if valid and complete, submit claims (reimbursable and/or disputes) to the contractor.
2. Reject claims that are not valid, and send them back to the local unit with a short explanation of why the claim is rejected.
3. Request additional information for incomplete claims.
4. Provide warranty claim acknowledgment closeout and/or parts/assemblies disposition instructions to the local unit.
5. Insure the contractor performs in accordance to the terms of the contract.
6. Verify, administer, and process warranty claims.

**GOVERNMENT RESPONSIBILITIES: - Continued**

7. Act as a liaison between owning unit, the contractor, supporting repair facility and TACOM.
8. Notify the owning units of all warranty claim acknowledgments/close-outs, information and/or instructions received from TACOM or the contractor.
9. Act as a liaison between local dealers and the Army.
10. Enter all open and closed WCAs into the Army Electronic Product Support (AEPS), Electronic Deficiency Reporting System (DRS).
11. The information/data provided on the (WP 0136) or (WP 0136) are placed into the AEPS DRS at the installation WARCO office to facilitate MSC management and tracking of warranties.

**Alterations/Modifications:**

Alterations/modifications shall not be applied unless authorized by TACOM.

**WARRANTY DATA PLATE**

All Heavy Equipment Transporter (HET) Tractors will have a warranty data plate. The contractor is required to mount his data plate within clear view of the operator.

When the HET Tractor is received, the owning unit should locate the warranty data plate and check the warranty start date with date shown on the applicable (WP 0136) or (WP 0136). If these dates differ, disregard the data plate. The date shown on the (WP 0136) or (WP 0136) is the date to be used as the ( ).

**CLAIM PROCEDURES:**

The procedures for reporting warranty claims are found in (WP 0136) and this work package. Responsibilities of the TACOM are found in (WP 0136). All Warranty Claim Actions are processed on (WP 0136) and (WP 0136). It is very important to fill in the blocks on the forms as accurately as possible.

The contractor shall be notified in writing within 30 days, utilizing (WP 0136) by the local Warranty Control Office/Officer (WARCO) following the discovery of a defect in supplies which requires contractor repair and/or replacement parts. This shall constitute formal notification of a warranty claim, and initiate the time period for contractor responsibilities and action under the warranty. This notification shall include, but not be limited to furnishing of the equipment serial number, operating hours, part number or NSN of the defective part, and circumstances surrounding the defect(s). At this time, the contractor will further be informed whether the owning unit has elected:

1. To correct the defect themselves.
2. To direct the contractor to correct the defect.

Upon completion of contractor repair, forward completed warranty claims (Information Only) electronically to AEPS (Army Electronic Product Support) <http://aeprs.ria.army.mil>.

**CLAIM PROCEDURES: - Continued**

The contractor shall reimburse the government for the cost of labor and/or replacement parts involved in the government correction of the defect. The government's Maintenance Allocation Chart (MAC) determines the times. Additionally, the cost of replacement parts obtained through the Government's supply channels will be determined by the amount identified in the contractor's current commercial dealer net price or Army Master Data File (AMDF) price, whichever is less. Furthermore, the owning unit may direct the contractor to provide the replacement parts that prove to be defective within the warranty period, without costs to the government, directly to their location or F.O.B., U.S. Port of Embarkation for OCONUS. The contractor shall furnish replacement parts within 10 working days after receipt of written claim notification. DO NOT submit warranty claims for reimbursement where repair labor costs and replacement parts costs combined do not exceed \$150.00 for any one failure.

Identification Of Failed Items. Failed warranty items shall be tagged/identified to prevent improper repair or use. Documents that describe the use of (WP 0136) and (WP 0136) shall be referenced. Items requiring special handling, storage, or shipment during the processing of claims shall be identified.

Disposition. The repair activity shall retain defective supplies for thirty (30) days following receipt of acknowledgment of warranty claim from WARCO or contractor. If receipt of acknowledgment is not received, inquiries should be made to your local WARCO. If receipt of acknowledgment is received but no instructions are forthcoming within thirty (30) days of receipt, supplies may be disposed.

Invalid Warranty Claims. When supplies are inspected by the contractor and found to be non-warrantable due to abuse or improper maintenance, or the supplies are found to be serviceable, the repair activity submitting the claim will be required to make reimbursement for contractor services. All failed items returned for warranty claim action will be monitored by the WARCO. Additionally, regarding contractor repair, the local WARCO must stipulate at the time of request for services that either no non-warranty work be done or be prepared to pay for such work.

**REIMBURSEMENT FOR ARMY REPAIR**

In the event that the repair activity should receive any reimbursement from the contractor, the monies must be forwarded to the following address: Defense Accounting Office, DAOTACOM, ATTN: DFAS-IN/EM-BED, TACOM, Warren, Michigan 48397-5000.

**CLAIM DENIAL/DISPUTES**

All denials or disputes will be handled by TACOM.



**REPORTING**

Reporting or recording action on a failed item shall be specified in (WP 0136). Contractor or repair activity unique forms shall not be used.

**STORAGE/SHIPMENT/HANDLING****Storage**

See coverage-specific data of this work package and preparation for storage for further information.

**Shipment**

See contractor responsibilities data and claim procedures sections of this work package, and preparation of equipment for transportation/shipment for further information.

**Handling**

See contractor responsibilities data and claim procedures sections of this work package, and safety, care, and handling for further information.

**END OF WORK PACKAGE**



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## **OPERATOR MAINTENANCE EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES**

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### **EQUIPMENT CHARACTERISTICS**

The Heavy Equipment Transporter (HET) Tractor is used in combination with the M1000 Trailer to form the Heavy Equipment Transport System (HETS). The HETS is used to load, unload, and transport the M1 Series Main Battle Tank (MBT) and other heavy tracked/wheeled vehicles weighing up to 140,000 lbs (63 560 kg) during administrative and tactical operations.

### **EQUIPMENT CAPABILITIES**

1. Operates in temperatures from -25°F to 120°F (-32°C to 49°C) in normal configuration (arctic kit not installed) and -50°F to 120°F (-46°C to 49°C) with arctic kit installed.
2. Fords water up to 28 in. (71 cm) deep for 5 minutes without damage or requiring maintenance before operation can continue.
3. Normal operating range is 325 mi (523 km), based on 250 gal. (946 L) of fuel and 250,911 lbs (113 914 kg) gross combination weight rating (GCWR) when operated at an average speed of 30 mph (48 km/h). Varying loads, prolonged idle, use of Power Takeoff (PTO), off-road driving, and climatic conditions affect operating range.
4. Tiedown points are located so HET Tractor can be restrained in all directions during air transport in C-5A and C-17 aircraft. HET Tractor is also capable of being transported by highway, rail, and sea.

### **EQUIPMENT FEATURES**

1. Caterpillar C18 Euro III electronically controlled, in-line six-cylinder, 4-cycle, fuel-injected, turbocharged, aftercooled 1,106 cu in. (18.1 L) diesel engine.
2. Push button automatic transmission with one reverse speed and seven forward speeds.
3. Anti-Lock Braking System (ABS) to all eight wheels.
4. Central Tire Inflation System (CTIS) allows operator to automatically adjust tire pressure and transfer case settings (6-wheel/8-wheel drive with high and low range transfer case for positive traction on unimproved road surfaces) to suit terrain conditions.
5. Power steering system consists of basic manual steering system with hydraulic boost. An auxiliary steering pump provides hydraulic boost in the event of main pump failure. Mechanical linkage also provides operator control in event of hydraulic oil pressure loss.

**EQUIPMENT FEATURES - Continued**

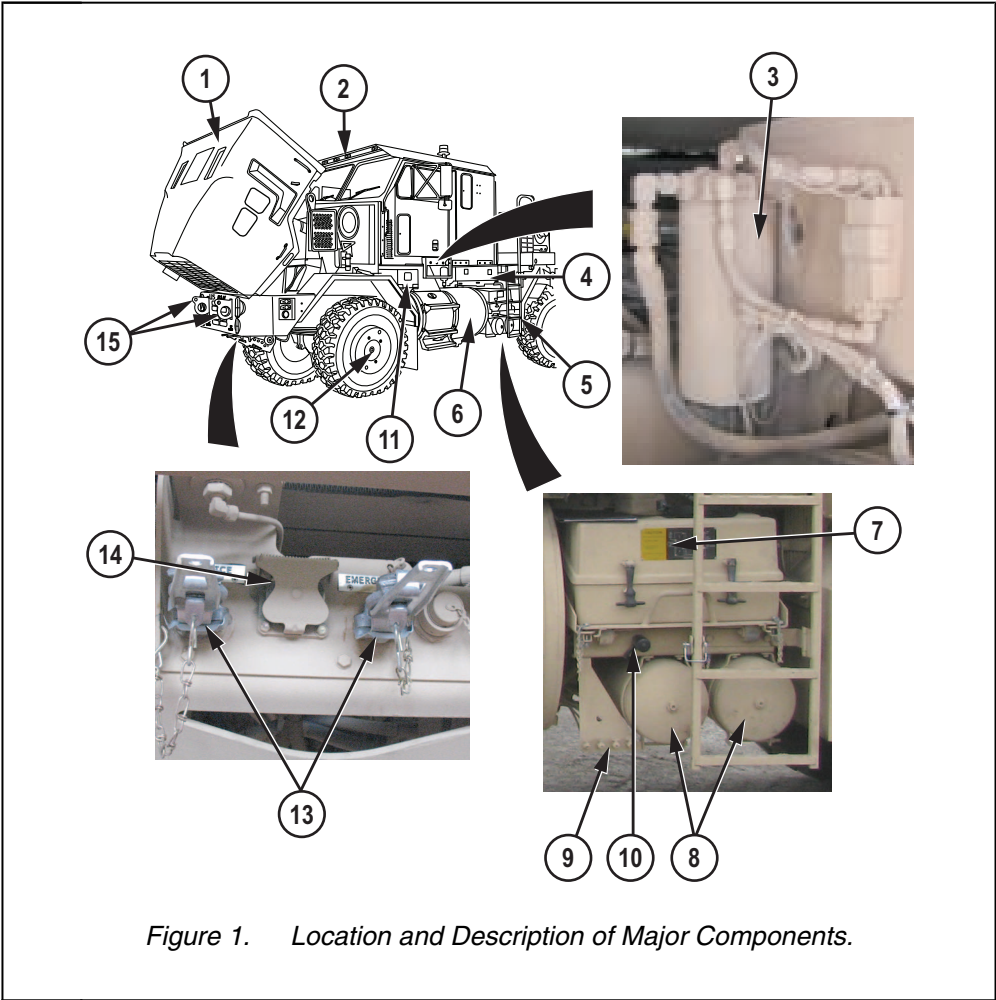
6. Fuel system includes two fuel tanks, injectors, pipes (inlet and outlet), manifolds (integral with the cylinder head), pump, dual fuel filters, and fuel lines.
7. Personnel cab has accommodations for two personnel in front seats and four personnel in rear seat. Rear seat converts into beds which sleep two personnel.
8. Two main winches, each having 55,000 lbs (24 970 kg) capacity, used for recovering, loading, and unloading heavy tracked/wheeled vehicles. Auxiliary winch having 3,000 lbs (1 361 kg) capacity used for pulling main winch cable back to payload.
9. Heavy-duty, full oscillating fifth wheel accommodates M1000 trailer or any other trailer with 3-1/2 in. kingpin.
10. Two front and two rear towing eyes.
11. Manual-release pintle hook allows towing of trailer.

**END OF WORK PACKAGE**

OPERATOR MAINTENANCE  
LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

Major components and accessories found on the M1070A1 Heavy Equipment Transporter (HET) Tractor are illustrated and described below.

**Table 1. Location and Description of Major Components.**



*Figure 1. Location and Description of Major Components.*

1	<b>HOOD.</b> Houses engine and components.
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**Table 1. Location and Description of Major Components - Continued.**

2	<b>PERSONNEL CAB.</b> Provides protection from weather for crew and contains controls, gauges, and indicators. The cab has provisions to accommodate six fully-equipped personnel and sleeping provisions for two. The cab is equipped with a footrest, rear window, rifle mounts, and a stowage area under rear seat.
3	<b>FUEL FILTER.</b> Removes water and contaminants from fuel before it enters fuel pump. The fuel filter unit incorporates a thermostatically activated electric heater to prevent gelling of fuel in cold weather operation.
4	<b>STOWAGE BOX.</b> Used to stow Components Of End Item (COEI), Basic Issue Items (BII) (WP 0137), and Additional Authorization List (AAL) (WP 0138) items.
5	<b>WINCH PLATFORM ACCESS LADDER.</b> Provides access to winch platform and winch controls. Ladder can be rotated to one side to allow access to battery box.
6	<b>NO. 1 FUEL TANK.</b> A 150 gal. (568 L) tank which stores fuel used to operate engine. Receives excess fuel not used by engine fuel injection system. Connects to fuel tank No. 2 with hose and shutoff valve.
7	<b>BATTERY BOX.</b> Houses and protects four batteries. Pulls out for easier access to batteries (WP 0130).
8	<b>AIR RESERVOIRS.</b> Store compressed air for operation of brake, suspension, and central tire inflation systems.
9	<b>AIR RESERVOIR DRAIN VALVES.</b> Used to drain air from reservoirs.
10	<b>PNEUMATIC AIR CHUCK.</b> Used to connect BII air line (WP 0137, Table 3, Item 26) to HET Tractor air system. Air line is used to manually inflate tires or power air wrench (WP 0137, Table 3, Item 48).
11	<b>TOOL BOX.</b> Used to stow Components Of End Item (COEI), Basic Issue Items (BII) (WP 0137), and Additional Authorization List (AAL) (WP 0138) items.
12	<b>NO. 1 DRIVING AXLE.</b> Controls direction of HET Tractor when in motion (WP 0007). When needed, transmits power to hubs to drive wheels.
13	<b>GLADHANDS.</b> Couples air supply from another HET Tractor during towing operations.

**Table 1. Location and Description of Major Components - Continued.**

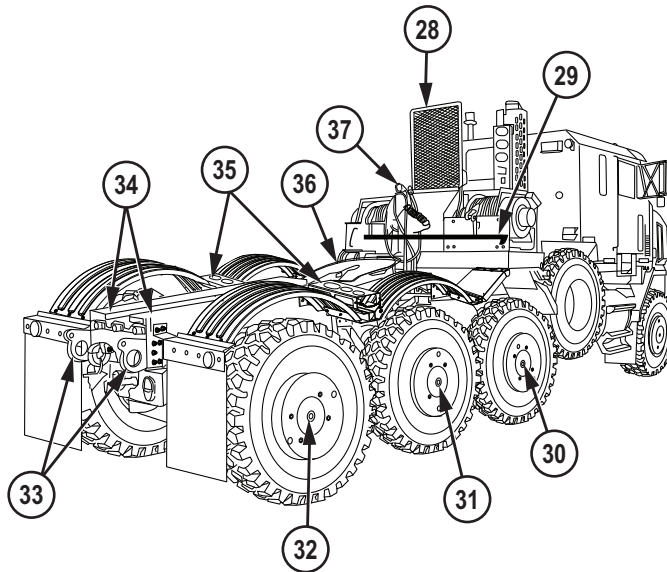
14	<b>ELECTRICAL CONNECTOR.</b> A 24-volt/12-pin connector receives power from towing HET Tractor electrical system through an intervehicular cable (WP 0137, Table 2, Item 1).
15	<b>FRONT TOW EYES.</b> Attachment points for towing operations.
16	<b>HYDRAULIC OIL RESERVOIR.</b> Stores, cools, and filters oil used to operate steering system and both main and auxiliary winches.
17	<b>MAIN (RECOVERY) WINCHES.</b> Two winches (WP 0011) which operate independently of each other used to recover, load, and unload heavy tracked and wheeled vehicles.
18	<b>REAR FENDERS.</b> Protect HET Tractor, trailer, other vehicles and personnel from debris thrown from rotating tires on No. 2, No. 3, and No. 4 axles.
19	<b>PINTLE HOOK.</b> Hitch used for towing trailer or another vehicle using a tow bar (WP 0075).

**Figure 2. Location and Description of Major Components.**

**Table 1. Location and Description of Major Components - Continued.**

20	<b>GLADHANDS.</b> Couples air supply to another vehicle or trailer during towing or trailering operations.
21	<b>24-VOLT TRAILER ELECTRICAL CONNECTOR.</b> 24-volt/12-pin connector which supplies power to trailer electrical system through intervehicular cable (WP 0137, Table 2, Item 1).
22	<b>24-VOLT TRAILER ABS CONNECTOR.</b> Supplies power to trailer electrical system through a cable supplied by trailer.
23	<b>12-VOLT TRAILER ELECTRICAL CONNECTOR.</b> A 12-volt /7-pin connector supplies power to trailer or to towed vehicle electrical system through an intervehicular cable.
24	<b>CATWALK LADDER.</b> Unfolds to allow safe access to fifth wheel access platform.
25	<b>AUXILIARY WINCH.</b> Pulls the main winch cables out to payload (WP 0011).
26	<b>BATTERY DISCONNECT SWITCH.</b> When in ON position, power is available to control modules and electrical system. When in OFF position, battery does not run down due to control module load.
27	<b>SLAVE RECEPTACLE.</b> A 24-volt receptacle used to supply or receive electrical power to or from another vehicle or to slave start (WP 0079) the HET Tractor or other vehicles.

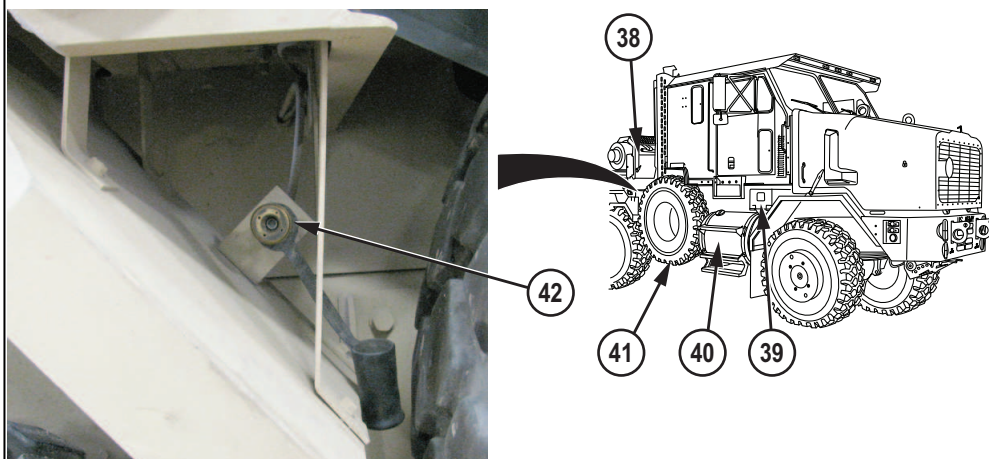


**Table 1. Location and Description of Major Components - Continued.****Figure 3. Location and Description of Major Components.**

28	<b>PERSONNEL GUARD.</b> Two-position guard protects operator during winch operation (WP 0058).
29	<b>PERSONNEL LADDER.</b> Provides access to engine compartment when servicing engine and accessories. Mounts in holes in driver side or passenger side fenders when in use. Folds and mounts winch platform for storage.
30	<b>NO. 2 AXLE.</b> Supports weight of HET Tractor and transmits power to hubs to drive rear wheels.
31	<b>NO. 3 AXLE.</b> Supports weight of HET Tractor and transmits power to hubs to drive rear wheels.
32	<b>NO. 4 AXLE.</b> Supports weight of HET Tractor and assists No. 1 axle in steering (WP 0007) when in motion. Transmits power to hubs to drive rear wheels.
33	<b>REAR TOW EYES.</b> Attachment points for towing operations.

**Table 1. Location and Description of Major Components - Continued.**

34	<b>APPROACH RAMPS.</b> Raise the front end of trailer to guide kingpin into fifth wheel.
35	<b>WHEEL CHOCK STOWAGE BOXES.</b> Used to stow wheel chocks (WP 0137, Table 3, Item 14).
36	<b>FIFTH WHEEL.</b> Couples trailer to HET Tractor (WP 0057).
37	<b>TREE/POGO STICK.</b> Holds gladhands and air lines for coupling semitrailer.

**Figure 4. Location and Description of Major Components.**

38	<b>TIRE DAVIT.</b> Raises and lowers spare tire.
39	<b>STOWAGE BOX.</b> Used to stow Components Of End Item (COEI), Basic Issue Items (BII) (WP 0137), and Additional Authorization List (AAL) (WP 0138) items.
40	<b>NO. 2 FUEL TANK.</b> A 100 gal. (379 L) tank stores diesel engine operating fuel.
41	<b>SPARE TIRE.</b> Used to replace a damaged tire (WP 0126).

**Table 1. Location and Description of Major Components - Continued.**

42	<b>PNEUMATIC AIR CHUCK.</b> Used to connect BII air hose (WP 0137, Table 3, Item 26) to HET Tractor air system. Air hose is used to manually inflate tires or power air wrench (WP 0137, Table 3, Item 48).
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**END OF WORK PACKAGE**



**OPERATOR MAINTENANCE  
DIFFERENCES BETWEEN MODELS**

**Table 1. Differences Between Heavy Equipment Transporter (HET) Tractor BASE and A1 Models.**

Equipment	Model	
	HET TRACTOR BASE	HET TRACTOR A1
Detroit Diesel Model 8V92TA DDEC II or III/IV Engine (Note 1)	•	
Caterpillar Model C-18 Engine		•
Allison Model CLT 754 Transmission	•	
Allison Model HD 4800 SP Transmission		•
CM Automotive Systems Central Tire Inflation System (CTIS)	•	
Dana Central Tire Inflation System (CTIS)		•
Kysor/Westran Cab Ventilator	•	
AR Lintern Air Conditioning System		•
Bendix Anti-Lock Brake System		•
Dual Front Steering Gears		•

**Table 1. Differences Between Heavy Equipment Transporter (HET) Tractor BASE and A1 Models - Continued.**

Equipment	Model	
	HET TRACTOR BASE	HET TRACTOR A1
Remote Transfer Case and Hydraulic Fluid Coolers		•
Remote Transmission Cooler		•
<b>Note (1):</b> HET BASE Tractor can be equipped with either a DDEC II or DDEC III/IV upgraded engine.		

**END OF WORK PACKAGE**

OPERATOR MAINTENANCE  
EQUIPMENT DATA

*Table 1. Heavy Equipment Transporter (HET) Tractor Dimensions.*

<b>Width (vehicle):</b> 102 in. (2 591 mm)
<b>Width (mirrors extended):</b> 144 in. (3 658 mm)
<b>Height (overall):</b> 146 in. (3 708 mm)
<b>Length (overall):</b> 382 in. (9 703 mm)
<b>Wheelbase:</b> 215 in. (5 461 mm)
<b>Track:</b> 82 in. (2 083 mm)
<b>5th Wheel Height:</b> 64 in. (1 626 mm)
<b>Kingpin Diameter:</b> 3.5 in. (89 mm)
<b>Ground Clearance:</b> 15.9 in. (404 mm)

*Table 2. Weights and Payloads.*

<b>HET Tractor Curb Weight:</b> 45,500 lbs (20 657 kg)
<b>Gross Vehicle Weight Rating (GVWR):</b> 94,500 lbs (42 903 kg)
<b>Gross Combination Weight Rating (GCWR):</b> 238,900 lbs (108 461 kg)
<b>Kingpin Load:</b> 46,000 lbs (20 884 kg)

*Table 3. Weight Distribution.*

<b>Axle Loads of HET Tractor (Curb Weight)</b>
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**Table 3. Weight Distribution. - Continued**

<b>No. 1 Axle:</b> 22,850 lbs (10 373 kg)
<b>No. 2 Axle:</b> 7,550 lbs (3 428 kg)
<b>No. 3 Axle:</b> 7,550 lbs (3 428 kg)
<b>No. 4 Axle:</b> 7,550 lbs (3 428 kg)
<b>Axle Loads of HET Tractor (Gross Vehicle Weight)</b>
<b>No. 1 Axle:</b> 25,200 lbs (11 441 kg)
<b>No. 2 Axle:</b> 22,400 lbs (10 170 kg)
<b>No. 3 Axle:</b> 22,400 lbs (10 170 kg)
<b>No. 4 Axle:</b> 22,400 lbs (10 170 kg)

**Table 4. HET Tractor Performance.**

<b>Cruising Range at GCWR:</b>
<b>Maximum Sustained Forward Speed (at 2100 rpm) - 7th Gear:</b> 50.1 mph (80.6 km/h)
<b>Maximum Sustained Forward Speed (at 2100 rpm) - 6th Gear:</b> 43.6 mph (70.1 km/h)
<b>Maximum Sustained Forward Speed (at 2100 rpm) - 5th Gear:</b> 32.1 mph (51.6 km/h)
<b>Maximum Sustained Forward Speed (at 2100 rpm) - 4th Gear:</b> 22.5 mph (36.2 km/h)
<b>Maximum Sustained Forward Speed (at 2100 rpm) - 3rd Gear:</b> 16.2 mph (26.1 km/h)
<b>Maximum Sustained Forward Speed (at 2100 rpm) - 2nd Gear:</b> 8.8 mph (14.2 km/h)
<b>Maximum Sustained Forward Speed (at 2100 rpm) - 1st Gear:</b> 4.2 mph (6.8 km/h)
<b>Maximum Grade at GCWR:</b> 15 percent
<b>Maximum Grade w/50,000 lbs (22 700 kg) Payload:</b> 30 percent
<b>Maximum Side Slope at GCWR:</b> 20 percent



**Table 4. HET Tractor Performance. - Continued**

<b>Maximum Towed Speed (refer to FM 4-30.31):</b> 5 mph (8 km/h)
<b>Maximum Ford Depth:</b> 28.1 in. (711 mm)
<b>Approach Angle:</b> 30 degrees
<b>Turning Circle (HET Tractor Only):</b> 85.8 ft. (26.2 m)

**Table 5. Fluid Capacities.**

Refer to lubrication instructions (WP 0124) in operator's Preventive Maintenance Checks and Services (PMCS) for HET Tractor fluid capacities.

**Table 6. Engine.**

<b>Make:</b> Caterpillar
<b>Model:</b> C-18 EURO III
<b>Type:</b> 4-Stroke, Inline-Type Diesel, Turbocharged, Aftercooled
<b>Cylinders:</b> 6
<b>Bore:</b> 5.71 in. (145 mm)
<b>Stroke:</b> 7.2 in. (183 mm)
<b>Displacement:</b> 1,106 cid (18.1 L)
<b>Torque (at 1,400 rpm):</b> 1900 lb-ft (1 400 N·m)
<b>Maximum Brake Horsepower (at 2100 rpm):</b> 700 hp SAE (522 kW)
<b>Maximum Governed Engine Speed (Loaded):</b> 2,300 rpm
<b>Oil Filter Type:</b> Full Flow, Replaceable Element
<b>Oil Filter Quantity:</b> 2

**Table 7. Fuel System.**

<b>Type:</b> Electronic Fuel Injection
<b>Tank Quantity:</b> 2
<b>Air Cleaner Type:</b> Dry element

**Table 8. Cooling System.**

<b>Radiator Working Pressure:</b> 10 psi (68.95 kPa)
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**Table 9. Air Compressor.**

<b>Make:</b> Bendix
<b>Model:</b> BA-922
<b>Type:</b> Two-Cylinder, Piston-Type, Gear Driven
<b>Capacity:</b> 38 CFM (1.06 cu L/min) at 3,000 rpm

**Table 10. Electrical System.**

<b>Alternator</b>
<b>Make:</b> C.E. Niehoff
<b>Model:</b> N1602-3 (28 VDC, 400 amp)
<b>Drive Type:</b> Belt
<b>Voltage Regulator:</b> C.E. Niehoff N3237 (28 VDC)
<b>Dual Voltage System:</b> 24 VDC alternator, 12 VDC transformer for accessories and trailer power connection
<b>Starter</b>
<b>Make:</b> Leece Neville

**Table 10. Electrical System. - Continued**

<b>Model:</b> 24 VDC per (WP 0136), Type II, Grade A
<b>Rating:</b> 800 Amps, 83 lb-ft (113 N·m) at 17.3 VDC
<b>Batteries</b>
<b>Make:</b> Exide
<b>Type:</b> 6TMF
<b>Number of Batteries:</b> 4 (additional two batteries if arctic heater kit is installed)
<b>Battery Connection:</b> Series - parallel
<b>Battery Capacity (at 20 hour rate):</b> 900 amp
<b>Rating:</b> 600 Cold Cranking Amps at 0°F (-18°C) for 60 seconds

**Table 11. Transmission.**

<b>Make:</b> Allison
<b>Model:</b> 4800SP
<b>Type:</b> Automatic
<b>Number of Forward Speeds:</b> 7
<b>Number of Reverse Speeds:</b> 1

**Table 12. Power Takeoff #1.**

<b>Make:</b> Chelsea/Dana
<b>Model:</b> 276 series

**Table 13. Power Takeoff #2.**

<b>Make:</b> Chelsea/Dana
<b>Model:</b> 267 series

**Table 14. Transfer Case.**

<b>Make:</b> Oshkosh
<b>Model:</b> 30000 Series
<b>Type:</b> Single speed, Helical Gear

**Table 15. No. 1 Axle.**

<b>Make:</b> Axletech International
<b>Model:</b> 5000 Series
<b>Type:</b> Planetary Hub Reduction
<b>Ratio:</b> 6.945:1
<b>Maximum Load Capacity:</b> 29,500 lbs (13 393 kg)
<b>Steering Angle:</b> Right: 36 degrees, Left: 31 degrees 30 minutes
<b>Differential Carrier</b>
<b>Make:</b> Axletech International
<b>Model:</b> 5000 Series
<b>Type:</b> Spiral Bevel

**Table 16. No. 2 Axle.**

<b>Make:</b> Axletech International
-------------------------------------

**Table 16. No. 2 Axle. - Continued**

<b>Model:</b> 5000 Series
<b>Type:</b> Planetary Hub Reduction
<b>Ratio:</b> 6.945:1
<b>Maximum Load Capacity:</b> 23,500 lbs (10 669 kg)
<b>Differential Carrier</b>
<b>Make:</b> Axletech International
<b>Model:</b> 5000 Series
<b>Type:</b> Spiral Bevel

**Table 17. No. 3 Axle.**

<b>Make:</b> Axletech International
<b>Model:</b> 5000 Series
<b>Type:</b> Planetary Hub Reduction
<b>Ratio:</b> 6.945:1
<b>Maximum Load Capacity:</b> 23,500 lbs (10 669 kg)
<b>Differential Carrier</b>
<b>Make:</b> Axletech International
<b>Model:</b> 5000 Series
<b>Type:</b> Spiral Bevel

**Table 18. No. 4 Axle.**

<b>Make:</b> Axletech International
-------------------------------------

**Table 18. No. 4 Axle. - Continued**

<b>Model:</b> 5000 Series
<b>Type:</b> Planetary Hub Reduction
<b>Ratio:</b> 6.945:1
<b>Maximum Load Capacity:</b> 23,500 lbs (10 669 kg)
<b>Steering Angle:</b> Right: 9 degrees, Left: 8 degrees 16 minutes
<b>Differential Carrier</b>
<b>Make:</b> Axletech International
<b>Model:</b> 5000 Series
<b>Type:</b> Spiral Bevel

**Table 19. Propeller Shafts.**

<b>Make:</b> Dana Spicer
<b>Model (Transmission to Transfer Case):</b> 1880
<b>Model (Transfer Case to Axle No. 1):</b> 1710 HD
<b>Model (Transfer Case to Axle No. 2):</b> 1880
<b>Model (No. 2 Axle to No. 3 Axle):</b> 1810 HD
<b>Model (No. 3 Axle to No. 4 Axle):</b> 1810 HD

**Table 20. Suspension System.**

<b>Front</b>
<b>Make:</b> Hendrickson
<b>Type:</b> Taper Leaf

**Table 20. Suspension System. - Continued**

Rear
<b>Make:</b> Hendrickson
<b>Type:</b> Air Ride

**Table 21. Brake System.**

<b>Make:</b> Axletech
<b>Model:</b> 16.5 in. (419 mm) QY Series
<b>Type:</b> S-Cam. Air Actuated
<b>Drum Size:</b> 16.5 in. (419 mm) diameter X 7 in. (180 mm) wide
<b>FMVSS Certification:</b> Yes
<b>Brake Air Chambers:</b> 8
<b>Pressure Range:</b> 45-120 psi (310-827 kPa)

**Table 22. Automatic Braking System (ABS) / Traction Control (TC) System.**

<b>Make:</b> Bendix
<b>Model:</b> 6S/6M
<b>Type:</b> Dual Channel

**Table 23. Hydraulic System.**

<b>Operating Pressure:</b> 3,000 psi (20 685 kPa)
<b>Overload Protection:</b> Yes

**Table 24. Cab.**

<b>Windshield:</b> Tinted, two-piece, safety glass
<b>Personnel Capacity:</b> 6
<b>Sleeping Capacity:</b> 2

**Table 25. Towing Eyes.**

<b>Quantity:</b> 4 (2 front, 2 rear)
<b>Maximum Load Capacity Each:</b> 26,000 lbs (11 804 kg)

**Table 26. Pintle Hook.**

<b>Type:</b> Manual Release
<b>Maximum Load Capacity - Pulling:</b> 49,000 lbs (22 246 kg)
<b>Maximum Load Capacity - Vertical:</b> 9,800 lbs (4 449 kg)

**Table 27. Recovery Winches (2).**

<b>Make:</b> DP Manufacturing
<b>Model:</b> 55K
<b>Speeds:</b> 2
<b>Maximum Load (per winch):</b> 55,000 lbs (24 970 kg)
<b>Cable Dimensions:</b> 1 in. (25 mm) diameter X 170 ft. (51.8 m) length

**Table 28. Auxiliary Winch.**

<b>Make:</b> DP Manufacturing
<b>Model:</b> 3GN



**Table 28. Auxiliary Winch. - Continued**

<b>Speeds:</b> 1
<b>Maximum Load (per winch):</b> 3,000 lbs (1 362 kg)
<b>Cable Dimensions:</b> .25 in. (6.4 mm) diameter X 300 ft. (91.5 m) length

**Table 29. Wheels.**

<b>Make:</b> Accuride
<b>Rim Size:</b> 20 in. (510 mm) x 10 in. (250 mm)
<b>Type:</b> Two-piece bolt together wheel
<b>Quantity:</b> 9 (including spare)
<b>Stud Quantity Per Wheel:</b> 10
<b>Maximum Wheel Load:</b> 16,000 lbs (7 264 kg)

**Table 30. Central Tire Inflation System (CTIS).**

<b>Make:</b> Dana/Eaton
-------------------------

**Table 31. Tires.**

<b>Make:</b> Michelin
<b>Size:</b> 16R20 XZL
<b>Tread Design:</b> Non-Directional, On-Off Road
<b>Ply Rating:</b> 22 Ply
<b>Type:</b> Tubeless
<b>Load Range:</b> M

Table 31. Tires. - Continued

Per Tire Load (HET Tractor Unloaded)
Front: 10,980 lbs (4 895 kg)
Rear: 3,800 lbs (1 725 kg)
Per Tire Load (HET Tractor at GVWR)
Front: 12,800 lbs (5 811 kg)
Rear: 11,070 lbs (5 026 kg)

Table 32. Auxiliary Equipment.

M12 EMI Arctic Engine Heater Kit
Chemical Alarm Kit
Decontamination Apparatus Portable (DAP) Kit
Gas Particulate Filter Unit (GPFU)
Radio
<b>Note:</b> HET Tractor may or may not be equipped with any of these items depending on mission, climate, or other factors.

Table 33. Load Classification Chart.

Configuration	MLC
M1070 HET A1 Tractor without Trailer	22
M1070 HET A1 Tractor (LTAS armor installed) without Trailer	29
M1070 A1 HET Tractor with M1000 Trailer	36
M1070 A1 HET Tractor (LTAS armor installed) with M1000 Trailer	38
M1070 A1 HET Tractor with M1000 Trailer and M1 Tank	96

**Table 33. Load Classification Chart - Continued.**

Configuration	MLC
M1070 A1 HET Tractor (LTAS armor installed) with M1000 Trailer and M1 Tank	99
M1070 A1 HET Tractor with M1000 Trailer and M1 Tank with Mine Clearing Blade	101
M1070 A1 HET Tractor (LTAS armor installed) with M1000 Trailer and M1 Tank with Mine Clearing Blade	103

**Table 34. Terrain Condition vs Maximum Speed vs Tire Pressure (All Tires).**

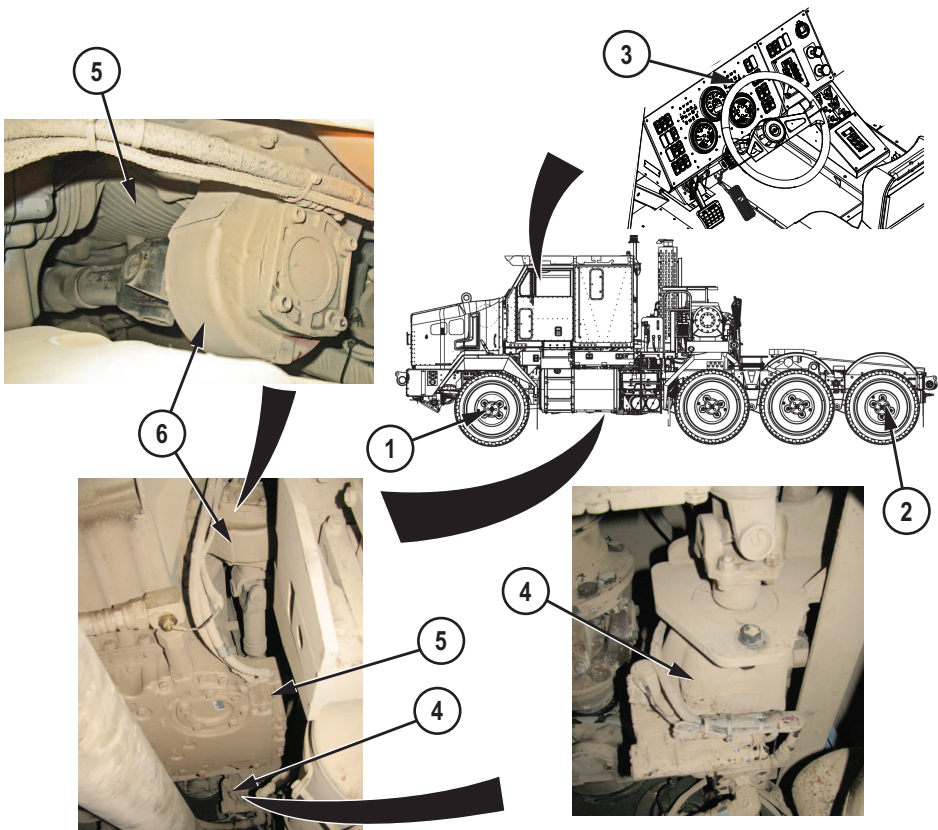
Refer to Central Tire Inflation System (CTIS) Operation, Table 2 for this information.

**END OF WORK PACKAGE**



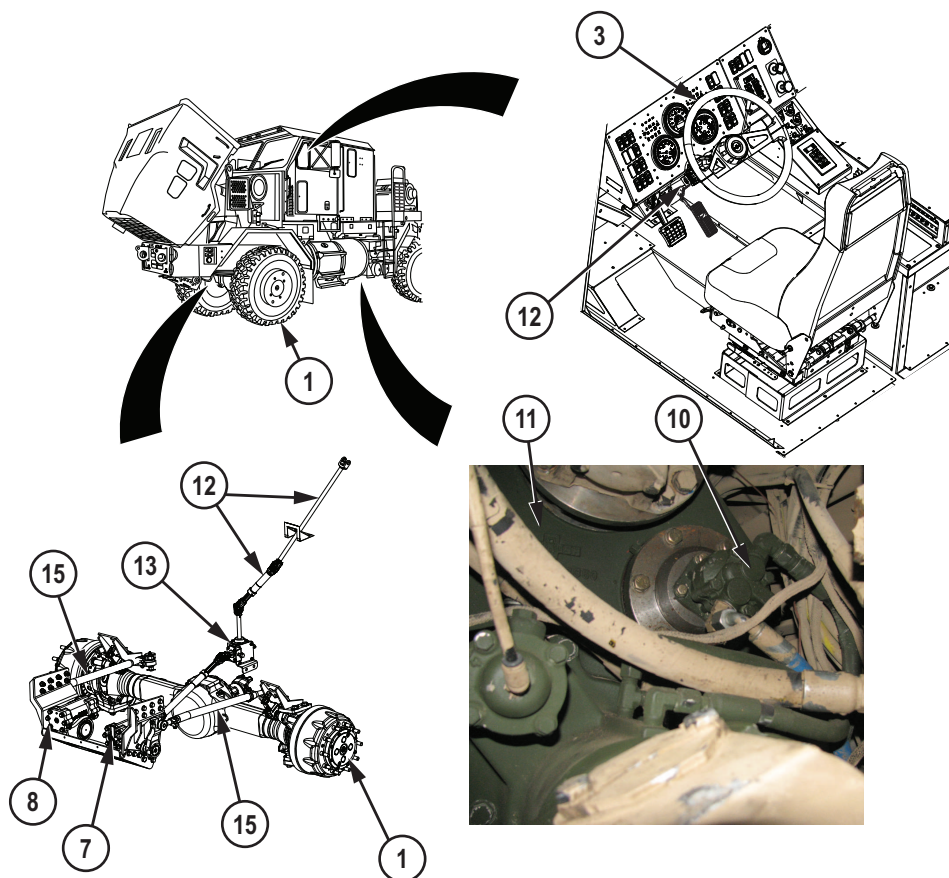
## OPERATOR MAINTENANCE STEERING SYSTEM

The No. 1 (1) and No. 4 (2) axles are used to steer the Heavy Equipment Transporter (HET) Tractor. Each of the two steering axles (1 and 2) turn in opposing directions via an interconnected series of shaft linkages, which rotate with hydraulic power assist in response to the operator's inputs via turning the steering wheel (3).



*Figure 1. Steering System Theory of Operation.*

Hydraulic power to assist the operator in steering the HET Tractor is generated by a steering pump (4) driven by the transmission (5) via a dedicated Power Take-Off (PTO) (6). The steering pump (4) provides pressure to the No. 1 axle master steering gear (7), No. 1 axle slave steering gear (8) and No. 4 axle steering gear (9).

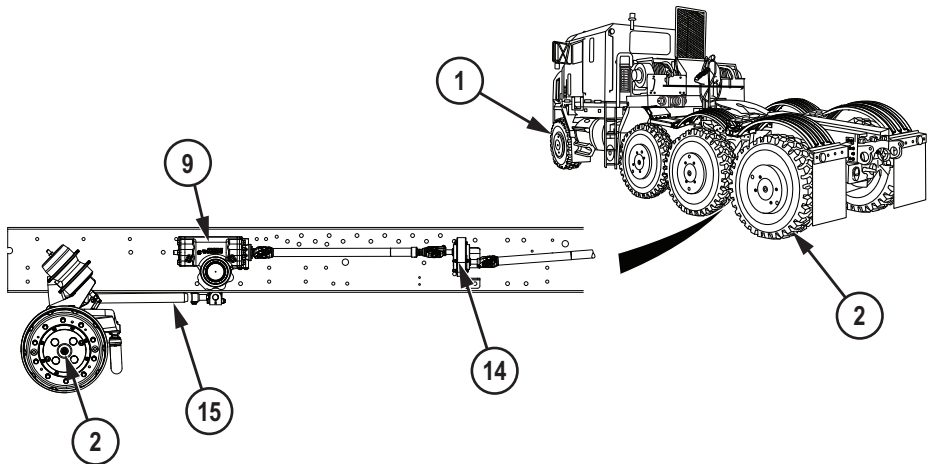


*Figure 2. Steering Motion Input Components.*

In the event of main steering system failure, an auxiliary steering pump (10) connected to the transfer case (11) provides hydraulic power to the steering system.

As the steering wheel (3) is turned by the operator, the rotational motion of the upper steering assembly (12) is translated at a tee gear box (13) to the No. 1 axle master steering gear (7) and No. 4 axle steering gear (9). Hydraulic connections transmit steering inputs from the No. 1 axle master steering gear (7) to the No. 1 axle slave steering gear (8).

A steering reduction gear (14) reduces and reverses the steering input to the No. 4 axle steering gear (9).



*Figure 3. Rear Steering Reduction Gear.*

The No. 1 axle master steering gear (7), No. 1 axle slave steering gear (8) and No. 4 axle steering gear (9) multiply the steering wheel's rotational force, and apply that force to drag links (15) and axle steering arms that move the four steering tires on No. 1 and No. 4 axles (1 and 2).

In the event of a fluid leak from the steering system (rendering power steering inoperable), the HET Tractor can be manually steered for short distances in emergency situations.

## **END OF WORK PACKAGE**





## OPERATOR MAINTENANCE POWER TRAIN

### Introduction

Power for the Heavy Equipment Transporter (HET) Tractor is generated by a four-stroke, inline-type, six-cylinder diesel engine coupled directly to a seven-speed push-button automatic transmission.

### Power Train

The engine (1) is capable of 700 brake horsepower (522 kW) at 2100 rpm.

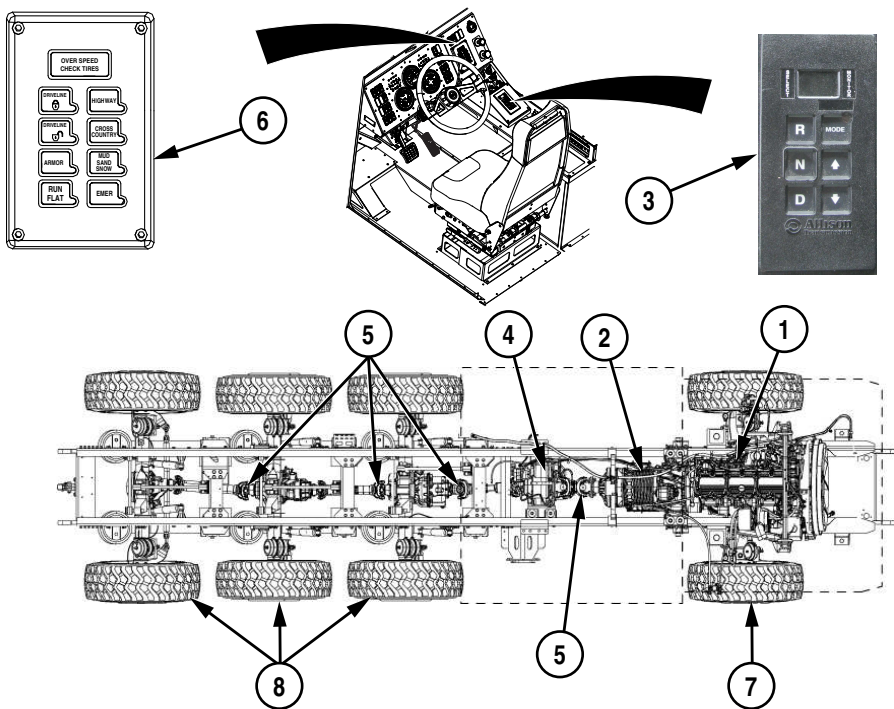


Figure 1.

The engine (1) is equipped with an electronic control system that regulates fuel delivery to each injector, governs engine speed for power takeoff operation, and performs self-diagnostics. Engine sensors and engine performance can be checked using a plug-in diagnostic reader.

---

**Power Train - Continued**

The transmission (2) has one reverse and seven forward gear ranges which can be manually selected by the operator via the transmission range selector (3). The transmission (2) will automatically upshift and downshift as engine speed and throttle position change and is capable of performing self-diagnostics. Transmission sensors and transmission performance can be checked using a plug-in diagnostic reader.

Power from the transmission (2) is directed through the transfer case (4) to propeller shafts (5) forward and rear, according to CTIS controller (6) and transmission range selector (3) settings.

The front axle (7) and rear tridem axles (8) are each equipped with planetary wheel ends.

The CTIS controller (6) in conjunction with the transmission range selector (3) controls lockouts in the axle differentials to provide positive drive to all four axles (7 and 8). Refer to CTIS theory of operation (WP 0012) and CTIS operation (WP 0052) for more information on CTIS/drivetrain interaction.

**END OF WORK PACKAGE**

## OPERATOR MAINTENANCE ELECTRICAL SYSTEM

### Introduction

The Heavy Equipment Transporter (HET) Tractor electrical system is a 24 Volts Direct Current (VDC) system that incorporates a 12 VDC converter. The 24 VDC source supplies electrical power to operate HET Tractor components, systems, and accessories including the Central Tire Inflation System (CTIS), engine starter motor, fuel filter, air dryers, trailer lights, ether injection system, HET Tractor lights, instrument panel/dash lighting, indicator/warning lights/gauges inside cab, and windshield wipers/washer motors.

### Electrical System

The main instrument panel (1) in the cab displays battery voltage for the 24 VDC system in the top right corner of the LCD (2).

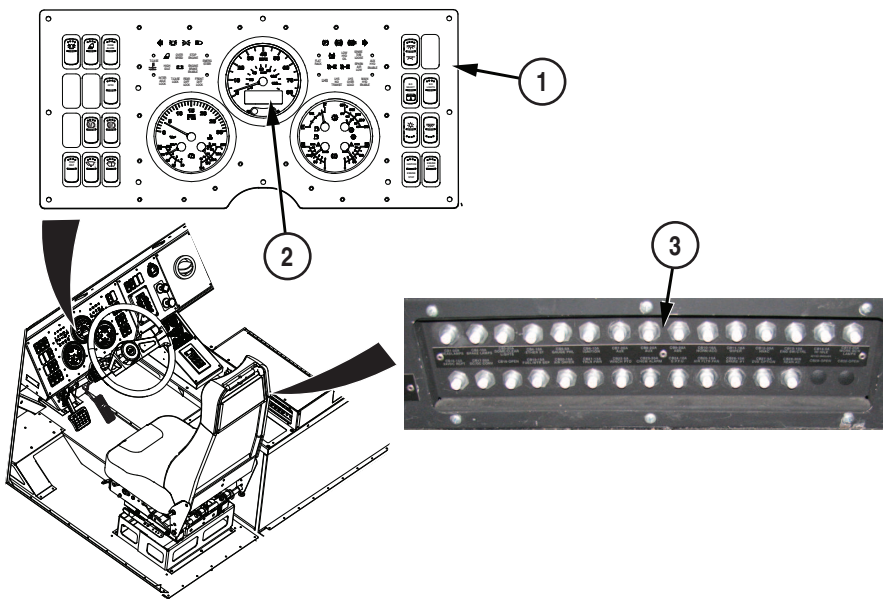


Figure 1. Electrical System.

The HET Tractor electrical circuits are protected against overloads by manual reset circuit breakers (3).

## Electrical System - Continued

Electrical power is provided by four 12 VDC series-parallel connected batteries (4). A battery disconnect switch (5) protects the HET Tractor from battery drainage during nonuse.

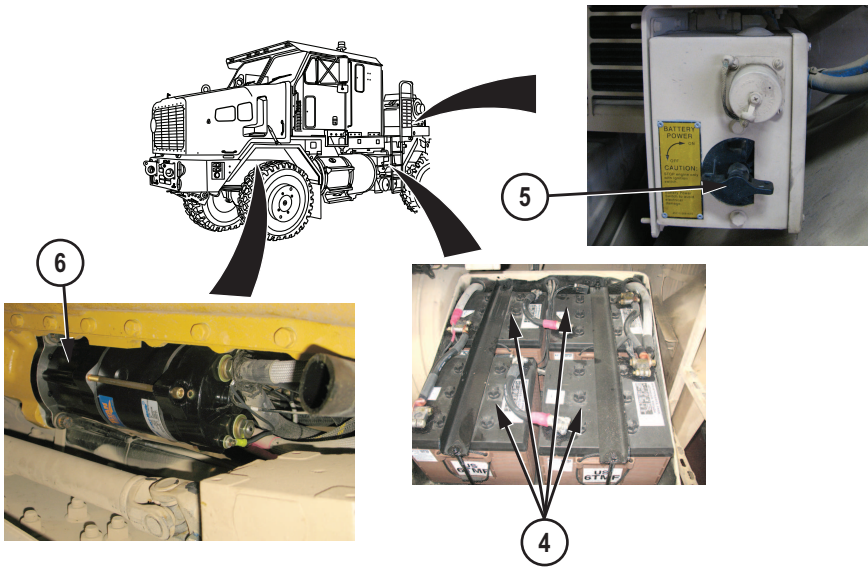


Figure 2. Electrical System.

A heavy-duty starting motor (6) provides cranking power necessary for starting the engine.

A 400 amp, belt-driven alternator (7) maintains battery charging and electrical equipment operation.

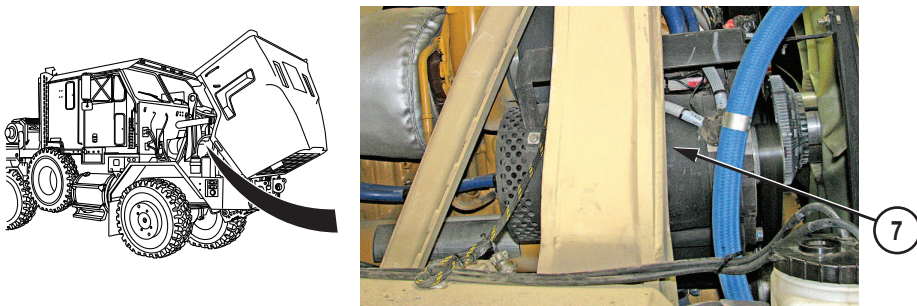


Figure 3. Electrical System.

**Electrical System - Continued**

Wiring harnesses are used to carry current to operate equipment and accessories.

**END OF WORK PACKAGE**



## OPERATOR MAINTENANCE AIR SYSTEM

### Introduction

Major systems on the Heavy Equipment Transporter (HET) Tractor that operate with air include: parking brakes, anti-lock braking system (ABS)-controlled service brakes, rear air spring suspension system, and Central Tire Inflation System (CTIS). Other vehicle components which operate with air include: transfer case and inter-axle lockups, winch tensioners and kickouts, windshield washer, and horns. Valves are installed to isolate air-operated components so operation of one does not affect the operation of another. Air system operating pressure is 60 to 130 psi (4 to 9 bar).

### Air System

The air system consists of an engine-driven air compressor (1) with an air pressure governor (2) and four air reservoirs:

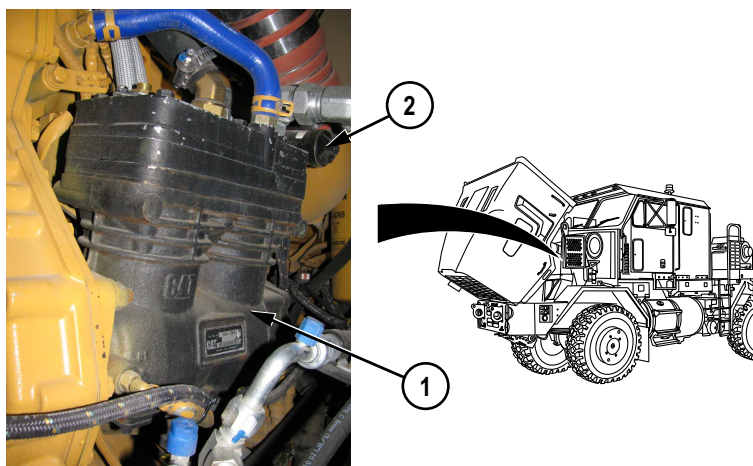
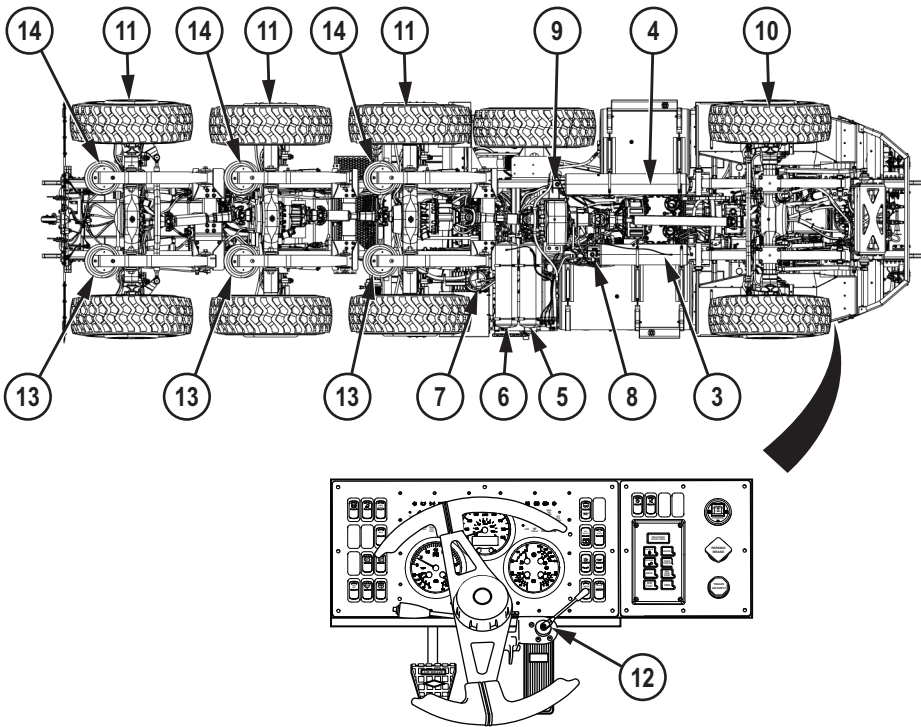


Figure 1. Air System.

- No. 1 air reservoir (3)
- No. 2 air reservoir (4)
- No. 3 air reservoir (5)
- No. 4 air reservoir (6)

**Air System - Continued***Figure 2. Air System.*

Air is drawn from the engine air intake and routed to the air compressor (1).

**NOTE**

- Air dryers are mounted on the No. 1 and No. 2 air reservoirs.
- The air dryers purge automatically, clearing accumulated water and other contaminants from the system. If water and contaminants were not removed from the air system, they could condense in air reservoirs and damage the air system.

Pressurized air flows from the air compressor (1) through the aftercooler (7), which cools the air. The air is then directed to the air dryers (8 and 9) which, remove any moisture/oil from the air before it enters the reservoirs (3 and 4):

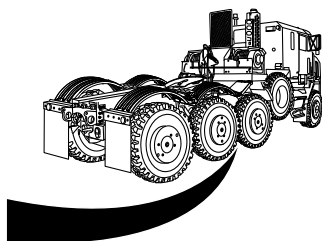
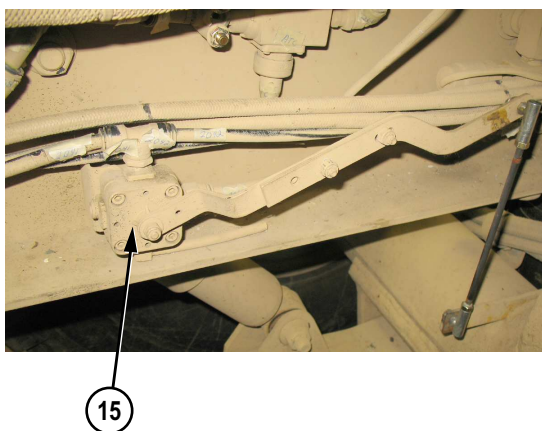
- Air dryer (8) is mounted to the No. 1 air reservoir (3). Air dryer (8) supplies air to the No. 1 air reservoir (3), No. 2 air reservoir (4), No. 3 air reservoir (5), and No. 4 air reservoir (6).
- Air dryer (9) is mounted to the No. 2 air reservoir (4). Air dryer (9) supplies air to air dryer (8).



### Air System - Continued

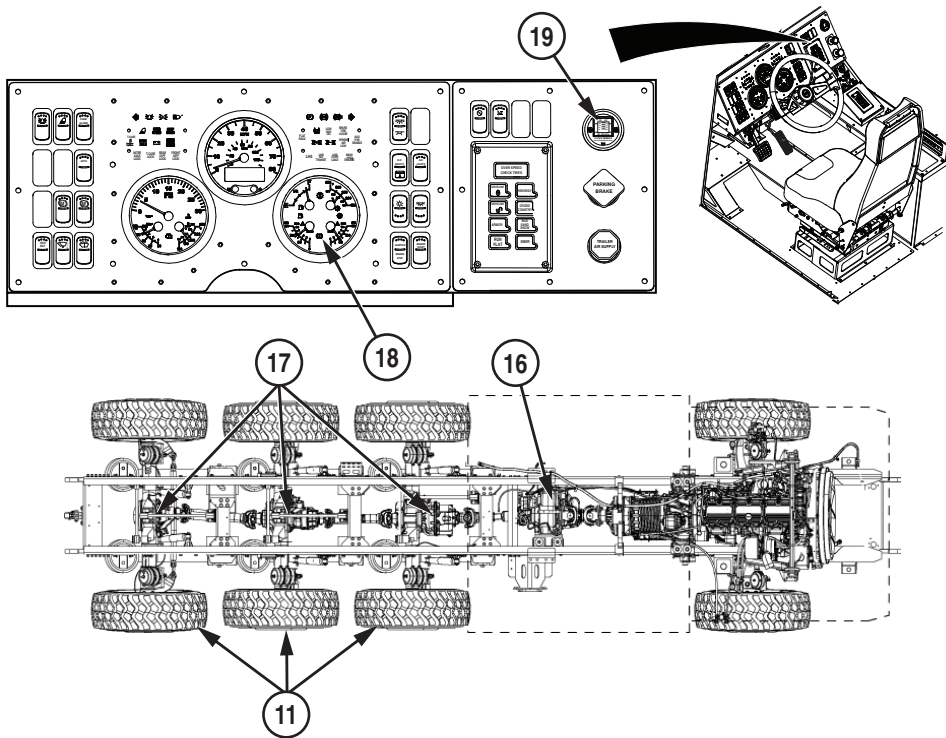
- An air governor (2) on the air compressor (1) senses air system pressure and maintains correct system pressure by venting air compressor (1) air output when additional pressure is not needed.
- No. 1 air reservoir (3) supplies air to axle No. 1 (10) service brakes, trailer brake system, and spring (parking) brakes on rear tridem axles (11).
- No. 2 air reservoir (4) supplies air to service brakes on rear tridem axles (11), and trailer handbrake control (12).
- No. 3 air reservoir (5) supplies air to CTIS (WP 0012), ride height control, transfer case and inter-axle lockups, winch system tensioners and kickouts, fan clutch, windshield washer, tire inflation connectors, and country horn.
- No. 4 air reservoir (6) supplies air to Automatic Traction Control (ATC) system, and service brakes on axle No. 4.

Each rear tridem axle (11) incorporates a driver side (13) and passenger side (14) air spring. The air springs (13 and 14) automatically inflate or deflate according to the load placed on the HET Tractor. Air is regulated to the air springs (13 and 14) by a pair (driver side and passenger side - passenger side shown) of height control valves (15).



*Figure 3. Air System.*

Air to the transfer case (16) enables engagement of eight-wheel drive in high or low gear range. Air to the axle differentials (17) enables engagement of axle locks.

**Air System - Continued**

*Figure 4. Air System.*

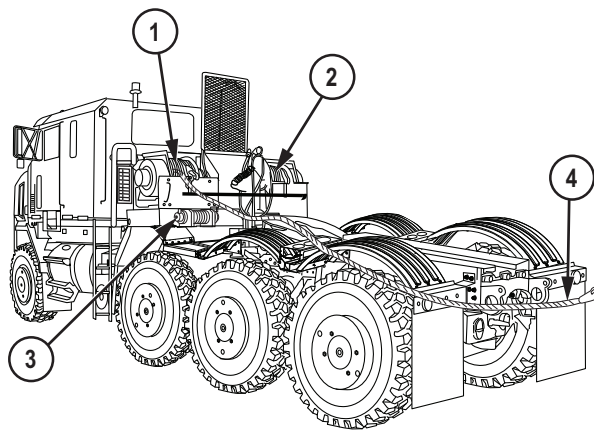
If air system pressure falls below 60 psi (4.13 bar), an audible alarm will sound and the brake system failure (low air pressure) indicator (18) will illuminate (red).

Air system protection elements include an AIR FILTER RESTRICTION indicator (19) that determines whether air flow through the air cleaner is impeded.

**END OF WORK PACKAGE**

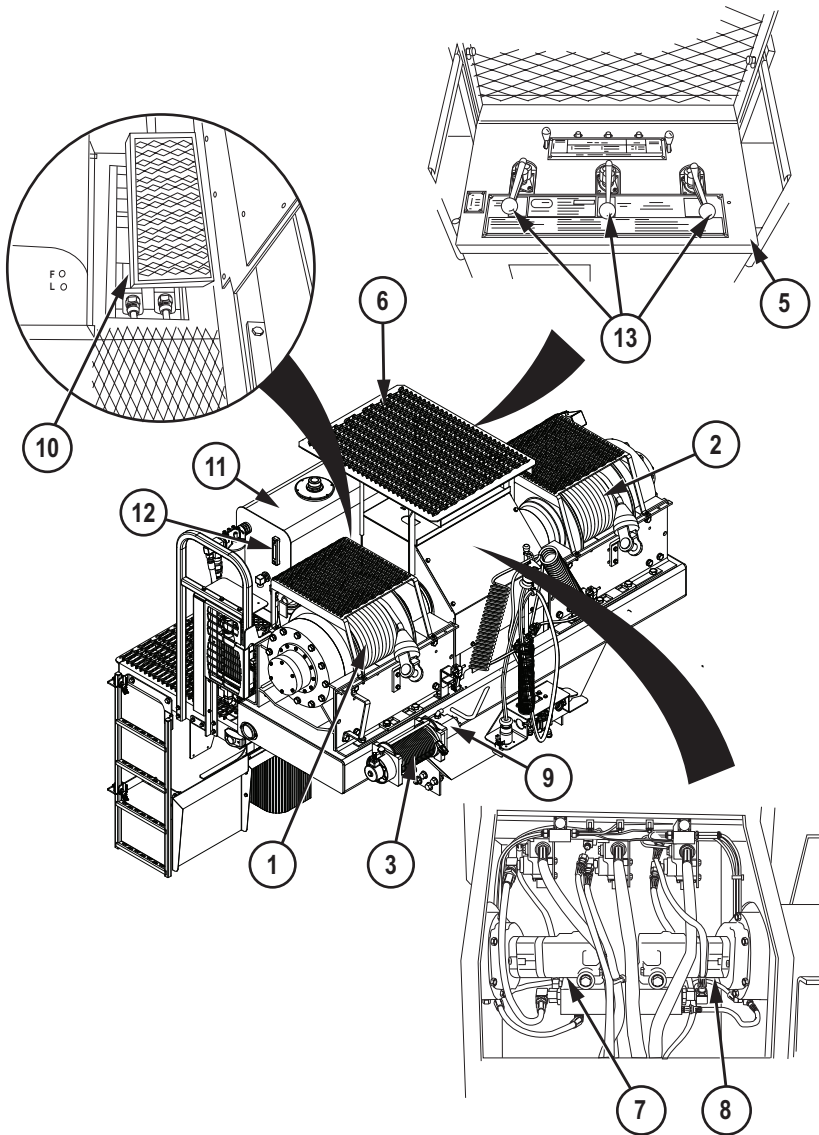
## OPERATOR MAINTENANCE WINCH SYSTEM

The Heavy Equipment Transporter (HET) Tractor winch system operates hydraulically and consists of a driver side main (recovery) winch (1), a passenger side main (recovery) winch (2) and an auxiliary winch (3). The main winches operate independently and are used to recover, load, and unload heavy-tracked and wheeled vehicles. The main (recovery) winches (1 and 2) are mounted side-by-side directly to the winch platform. Each main (recovery) winch (1 and 2) has a maximum capacity of 55,000 lbs (24 970 kg). The auxiliary winch (3) is used to pull the main winch cable (4) back to the payload. The auxiliary winch (3) is mounted to the winch platform just below the driver side main (recovery) winch (1). The auxiliary winch (3) has a maximum capacity of 3,000 lbs (1 362 kg).



*Figure 1. Winch System.*

All three winches (1 through 3) are controlled from the operator's station (5), which incorporates a personnel guard (6) that protects the operator during winching operations (WP 0058). Each main (recovery) winch (1 and 2) is powered by a two-speed hydraulic motor (7 and 8). The auxiliary winch (3) is powered by a single-speed hydraulic motor (9). A power take-off (PTO) driven hydraulic pump (10) supplies winch system with hydraulic oil from a 45 gal. (170 L) reservoir (11). A sight glass (12) on the reservoir (11) indicates the hydraulic oil level.



*Figure 2. Winch System.*

All three winches (1 through 3) have fail-safe, spring-loaded brakes which automatically set when winch control (13) is in neutral position or when hydraulic pressure is less than 270 psi (1 862 kPa).

**END OF WORK PACKAGE**

## OPERATOR MAINTENANCE CENTRAL TIRE INFLATION SYSTEM (CTIS)

### Introduction

The CTIS is designed to improve traction under different driving conditions and to maximize mobility without sacrificing tire life. CTIS will automatically adjust driveline lockup settings and air pressure in all eight tires to correspond to the terrain and cargo settings selected by the operator via the CTIS controller (1).

The CTIS controller (1) allows the operator to adjust the driveline lockup settings and tire pressures to one of four predetermined terrain settings using the following button/indicators:

- HIGHWAY (2)
- CROSS COUNTRY (3)
- MUD SAND SNOW (4)
- EMER (emergency) (5)

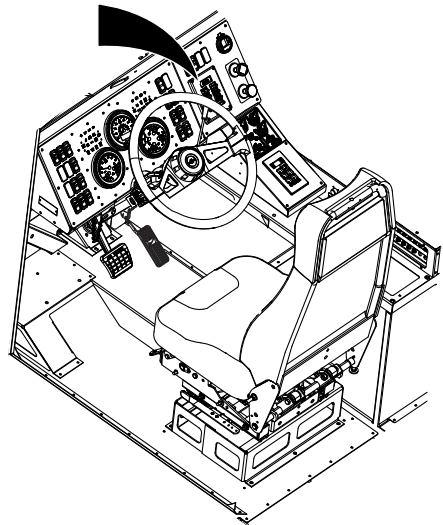
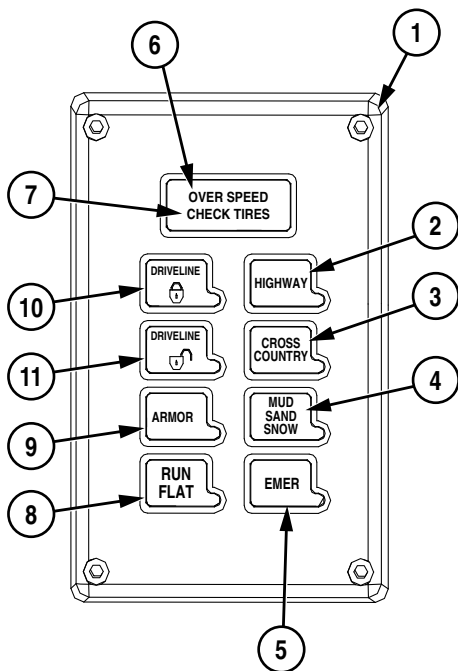


Figure 1. Central Tire Inflation System (CTIS).

Each tire pressure setting has a vehicle speed limitation (refer to Table 2 of Central Tire Inflation System (CTIS) Operation procedures for more information). If the average vehicle

## Introduction - Continued

speed exceeds this limit, the CTIS will activate a flashing (amber) OVERSPEED indicator (6) on the CTIS controller (1).

The CTIS controller (1) also incorporates a CHECK TIRES indicator (7) which flashes (amber) when low air pressure is detected in one or more tires.

The RUN FLAT button/indicator (8) allows the operator to select/deselect RUN FLAT mode. When selected (for minor tire damage), RUN FLAT mode checks tire pressures every 5 seconds and inflates tires as needed to compensate for leak(s).

The ARMOR button/indicator (9) allows the operator to select/deselect armor mode. When armor is installed, selecting armor mode inflates tires to compensate for added weight (refer to Table 2 of Central Tire Inflation System (CTIS) Operation procedures for more information).

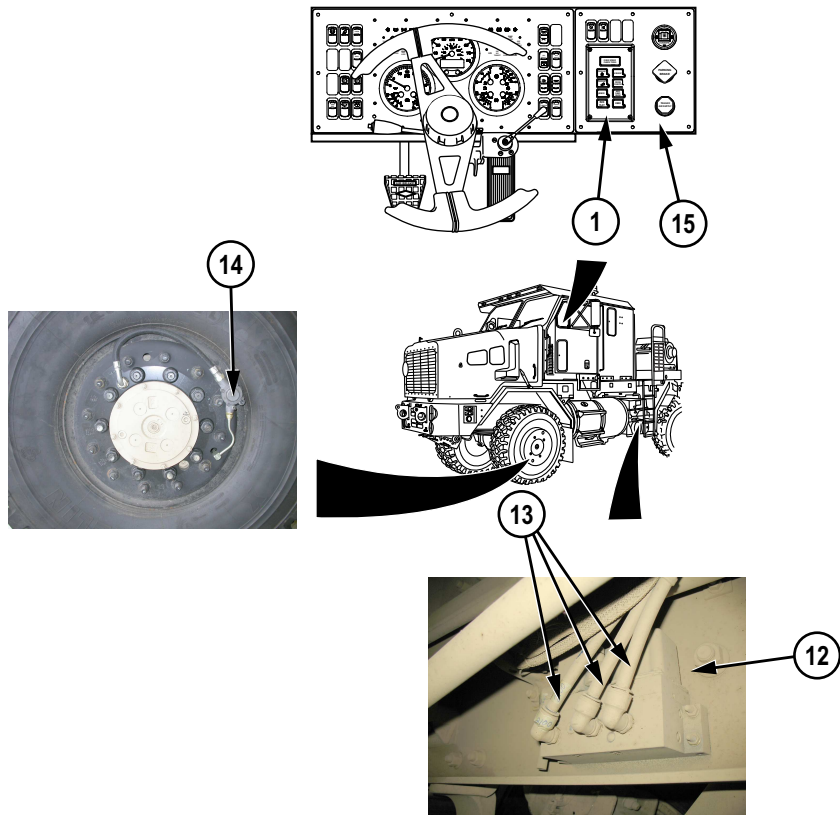
The DRIVELINE lock button/indicator (10) and DRIVELINE unlock button/indicator (11) allow operators to manually increase or decrease lock levels based on conditions (refer to Table 1 of Central Tire Inflation System (CTIS) Operation procedures for more information).

## Central Tire Inflation System (CTIS)

The CTIS consists of four major components:

- CTIS controller (1)
- Pressure control unit (12)
- Air lines (13)
- Wheel valves (14)

The CTIS controller (1) mounted on the air system panel (WP 0016) (15) contains the buttons and indicators for system operation.

**Central Tire Inflation System (CTIS) - Continued**

*Figure 2. Central Tire Inflation System (CTIS).*

**NOTE**

- The pressure control unit is located on the inside frame rail inboard of the axle No. 2 driver side tire.

Pressure control unit (12) contains:

- An inflation valve to increase tire pressures.
- A deflation valve to reduce tire pressures.
- A pressure transducer that monitors system pressure for the CTIS controller (1).

The air lines (13) to the axles connect to the pressure control unit. Air pressure passes through the air lines (13) and axle assemblies to the wheel valves (14). The wheel valves (14) are opened and closed by the CTIS pressure control unit (12) depending on individual tire pressures.

The air pressure to operate the CTIS comes from air reservoir No. 3 (WP 0010). The CTIS shuts off its air supply if air system pressure drops below 85 psi (5.86 bar) or if electrical

**Central Tire Inflation System (CTIS) - Continued**

power is interrupted. Air pressure is present in CTIS air lines (13) only when the system is monitoring (or adjusting) the tire pressures, approximately once every 15 minutes (every 15 seconds in RUN FLAT mode). At all other times, the system is not pressurized and the wheel valves (14) remain closed.

When the CTIS has completed a pressure adjustment cycle, the CTIS controller (1) starts an internal timer. If no changes occur during the next 15 minutes, a check cycle is automatically activated, during which tire pressures are measured and adjusted as necessary. This provides for improved tire life as hot tire pressures are adjusted and slowly leaking tires are kept inflated.

**END OF WORK PACKAGE**



## **CHAPTER 2**

# **OPERATOR INSTRUCTIONS**



OPERATOR MAINTENANCE  
CAB-MOUNTED FOOT CONTROLS

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of cab-mounted foot controls which are used in the operation of Heavy Equipment Transporter (HET) Tractor. Controls described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HET Tractor. Separate illustrations with keys are provided for learning about cab-mounted foot controls.

Table 1. Cab-Mounted Foot Controls.

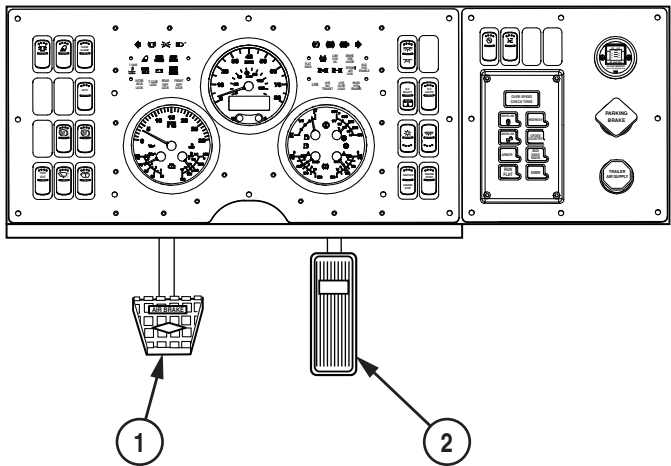


Figure 1. Cab-Mounted Foot Controls.

Key	Control/ Indicator	Function
-----	-----------------------	----------

1      Service Brake  
Pedal

NOTE

For Troubleshooting Procedures Only: Follow engine start procedures (WP 0045) exactly. Do

**Table 1. Cab-Mounted Foot Controls - Continued.**

Key	Control/ Indicator	Function
		not push service brake pedal until 15 seconds after pushing IGNITION/ENGINE STOP switch up to IGNITION position. This allows time for self-diagnostic tests to take place. Pushing service brake pedal before 15 seconds introduces a false ABS fault code.
		Push service brake pedal to apply HET Tractor service brakes.
		Release service brake pedal to release HET Tractor service brakes.
2	Throttle Pedal	Used to control engine speed:  Push throttle pedal down to increase engine speed.  Release throttle pedal to decrease engine speed.

**END OF WORK PACKAGE**

## **OPERATOR MAINTENANCE CAB-MOUNTED HAND CONTROLS**

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### **CONTROLS AND INDICATORS INTRODUCTION**

This section displays the location and describes the use of cab-mounted hand controls which are used in the operation of Heavy Equipment Transporter (HET) Tractor. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

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Table 1. Cab-Mounted Hand Controls.

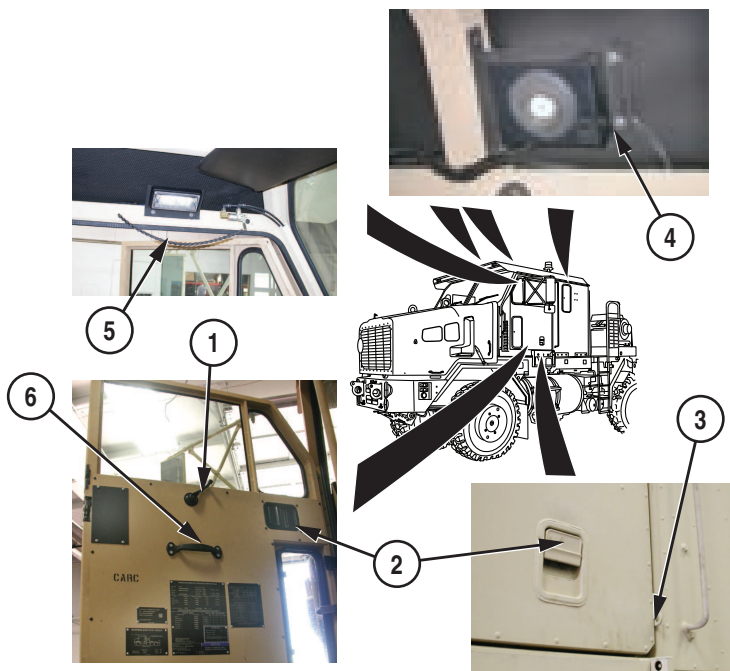


Figure 1. Cab-Mounted Hand Controls.

Key	Control/ Indicator	Function
1	Cab Door Window Glass Regulator	Located on each door. Raises or lowers window glass when handle is turned:  Driver Side Door:  Turn cab door window glass regulator counterclockwise to lower window glass.

**Table 1. Cab-Mounted Hand Controls - Continued.**

Key	Control/ Indicator	Function
		Turn cab door window glass regulator clockwise to raise window glass.
		Passenger Side Door:
		Turn cab door window glass regulator clockwise to lower window glass.
		Turn cab door window glass regulator counterclockwise to raise window glass.
2	Cab Door Latch	Located on inside and outside of each door. Opens cab door from inside and outside HET Tractor when pulled.
3	Cab Door Lock Bracket	Located on cab doors and cab door frames. Provide the means to lock door closed.
4	Map Light Switch (Three)	Two-position switch. One map light is located above passenger side door. Two map lights are located to rear of Driver side and passenger side door, above seat belt mount:
		Push switch up to turn map light on.
		Push switch down to turn map light off.
5	Air Horn Chain	Located above driver side door. Country horn is used in unpopulated areas:
		Pull air horn chain to sound country horn.

**Table 1. Cab-Mounted Hand Controls - Continued.**

Key	Control/ Indicator	Function
		Release air horn chain to silence horn.
6	Cab Door Handle	Located on each door. Closes cab door from inside HET Tractor when pulled.

**END OF WORK PACKAGE**



## **OPERATOR MAINTENANCE STEERING COLUMN-MOUNTED CONTROLS**

---

### **CONTROLS AND INDICATORS INTRODUCTION**

This section displays the location and describes the use of steering column-mounted controls which are used in the operation of Heavy Equipment Transporter (HET) Tractor. Controls described in this section are the same for all vehicles, except where otherwise indicated.

### **LOCATION AND USE OF CONTROLS AND INDICATORS**

Know the location and proper use of every control and indicator before operating HET Tractor. Separate illustrations with keys are provided for learning about steering column-mounted controls.

Table 1. Steering Column-Mounted Controls.

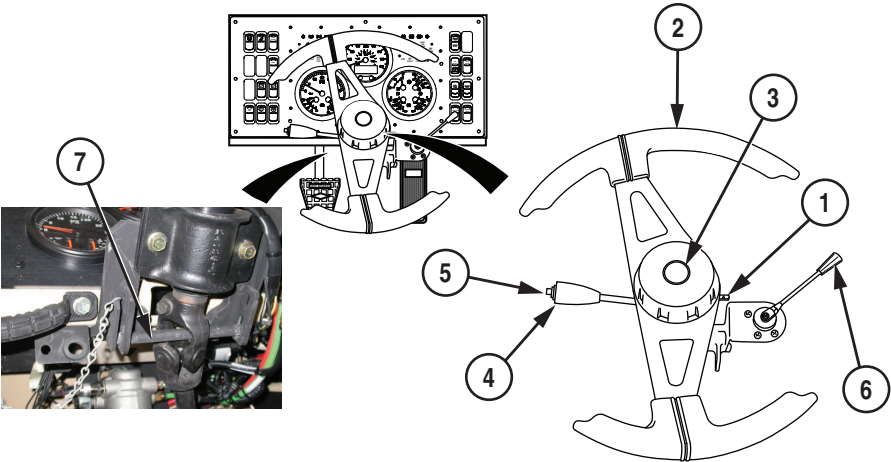


Figure 1. Steering Column-Mounted Controls.

Key	Control/ Indicator	Function
1	Emergency Flasher Control	<p><b>NOTE</b></p> <p>Emergency flashers will not operate when B.O. SELECT switch is set to on position.</p> <p><b>NOTE</b></p> <p>Left and right turn indicators will flash (green) when emergency flasher control is pushed in.</p> <p>Pull out emergency flasher control to deactivate emergency flashers.</p>
2	Steering Wheel	Used to control direction of HET Tractor travel.
3	City Horn Button	<p><b>NOTE</b></p> <ul style="list-style-type: none"><li>City horn button will not operate when B.O. SELECT switch is set to on position.</li></ul>

**Table 1. Steering Column-Mounted Controls - Continued.**

Key	Control/ Indicator	Function
		<ul style="list-style-type: none"> <li>City horn is for use in populated areas.</li> </ul>
4	Turn Signal Lever	<p><b>NOTE</b></p> <p>Turn signals will not operate when B.O. SELECT switch is set to on position.</p> <p><b>NOTE</b></p> <p>Right turn indicator will flash (green) when turn signal lever is pushed up.</p> <p><b>NOTE</b></p> <p>Left turn indicator will flash (green) when turn signal lever is pulled down.</p> <p>Turn signal lever automatically returns to off (center) position when steering wheel is returned to straight position (after turn).</p>
5	Headlight Dimmer Switch	<p>Push button switch used to raise or lower headlight beams:</p> <p><b>NOTE</b></p> <p>High beam indicator illuminates (blue) when headlight beams are raised.</p> <p><b>NOTE</b></p> <p>High beam indicator goes out when headlight beams are lowered.</p>
6	Trailer Handbrake Control Lever	<p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>Trailer handbrake control lever is not used during normal operation.</li> <li>Trailer handbrake control lever can be used for coupling and uncoupling trailers not equipped with spring brakes.</li> </ul>

**Table 1. Steering Column-Mounted Controls - Continued.**

Key	Control/ Indicator	Function
		Pull trailer handbrake control lever down to engage trailer service brakes.
		Release or push trailer handbrake control up to release trailer service brakes.
7	Steering Column Lock Pin	Prevents steering wheel from turning when installed in steering column.

**END OF WORK PACKAGE**

OPERATOR MAINTENANCE  
AIR SYSTEM PANEL CONTROLS AND INDICATORS

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of air system panel controls and indicators which are used in the operation of Heavy Equipment Transporter (HET) Tractor. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HET Tractor. Separate illustrations with keys are provided for learning about air system panel controls and indicators.

Table 1. Air System Panel Controls and Indicators.

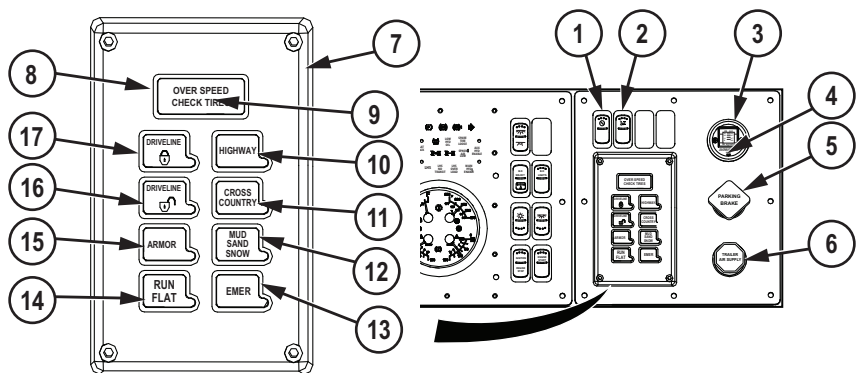


Figure 1. Air System Panel Controls and Indicators.

Key	Control/ Indicator	Function
1	CTIS On/Off Switch	Two-position switch that enables/disables CTIS and traction control functions:

**Table 1. Air System Panel Controls and Indicators - Continued.**

Key	Control/ Indicator	Function
		Push switch up to turn CTIS and traction control off.
		Push switch down to turn CTIS and traction control on.
2	Winch PTO Enable Switch	Two-position switch that engages power take-off (PTO) that drives winch hydraulic pump.
		Push switch up to turn winch PTO on.
		Push switch down to turn winch PTO off.
3	AIR FILTER RESTRICTION Indicator	Indicates when air flow through air cleaner filter is restricted. Yellow indicator enters red zone when air cleaner filter is clogged and needs service.
4	AIR FILTER RESTRICTION Indicator RESET Button	Push to reset AIR FILTER RESTRICTION indicator after air cleaner has been serviced.
5	PARKING BRAKE Control	<p><b>NOTE</b></p> <p>HET Tractor PARKING BRAKE control activates/deactivates trailer parking brakes (if so equipped) together with HET Tractor when TRAILER AIR SUPPLY control is pushed in.</p> <p>Push PARKING BRAKE control in to release parking brakes.</p>
6	TRAILER AIR SUPPLY Control	<p><b>NOTE</b></p> <p>When TRAILER AIR SUPPLY control is pushed in, HET Tractor PARKING BRAKE control acti-</p>

**Table 1. Air System Panel Controls and Indicators - Continued.**

Key	Control/ Indicator	Function
		vates/deactivates trailer parking brakes (if so equipped) together with HET Tractor.
		Pull TRAILER AIR SUPPLY control out to shut off air to trailer brake system.
7	CTIS Controller	Used to control tire inflation/deflation and driveline locking/unlocking for terrain conditions (WP 0052).
8	OVERSPEED Indicator	Flashes (amber) when speed of HET Tractor is too fast for existing tire pressure as selected by CTIS controller.
9	CHECK TIRES Indicator	Flashes (amber) when low air pressure is detected in one or more tires. Substantial tire damage may have occurred.
10	HIGHWAY Button/ Indicator	<p><b>NOTE</b></p> <p>Refer to Central Tire Inflation System (CTIS) Operation, Table 2 for maximum speed and tire pressure settings.</p> <p>Indicator flashes (green) when CTIS is adjusting tire pressures and driveline lockup settings.</p> <p>Indicator illuminates continuous (green) when CTIS tire pressures and driveline lockup settings are operating properly and CTIS pressure check/adjustment cycle has been completed.</p>
11	CROSS COUNTRY Button/ Indicator	<p><b>NOTE</b></p> <p>Refer to Central Tire Inflation System (CTIS) Operation, Table 2 for maximum speed and tire pressure settings.</p>

**Table 1. Air System Panel Controls and Indicators - Continued.**

Key	Control/ Indicator	Function
		Indicator flashes (green) when CTIS is adjusting tire pressures and driveline lockup settings.
		Indicator illuminates continuous (green) when CTIS tire pressures and driveline lockup settings are operating properly and CTIS pressure check/adjustment cycle has been completed.
12	MUD SAND SNOW Button/ Indicator	<div><b>NOTE</b> Refer to Central Tire Inflation System (CTIS) Operation, Table 2 for maximum speed and tire pressure settings.</div> <div>Indicator flashes (green) when CTIS is adjusting tire pressures and driveline lockup settings.</div> <div>Indicator illuminates continuous (green) when CTIS tire pressures and driveline lockup settings are operating properly and CTIS pressure check/adjustment cycle has been completed.</div>
13	EMER (emergency) Button/ Indicator	<div><b>NOTE</b> Refer to Central Tire Inflation System (CTIS) Operation, Table 2 for maximum speed and tire pressure settings.</div> <div>Indicator flashes (green) when CTIS is adjusting tire pressures and driveline lockup settings.</div> <div>Indicator illuminates continuous (green) when CTIS tire pressures and driveline lockup settings are operating properly and CTIS pressure check/adjustment cycle has been completed.</div>



**Table 1. Air System Panel Controls and Indicators - Continued.**

Key	Control/ Indicator	Function
14	RUN FLAT Button/ Indicator	<p>Press button when HET Tractor has sustained minor tire damage:</p> <p>Indicator flashes (green) when CTIS is adjusting tire pressures.</p> <p>Indicator illuminates continuous (green) when CTIS tire pressures are being properly maintained.</p>
15	ARMOR Button/ Indicator	<p>Press button for approximately 15 seconds when HET Tractor is configured with armor kit:</p> <p>Indicator flashes (green) when CTIS is adjusting tire pressures.</p> <p>Indicator illuminates continuous (green) when CTIS tire pressures are properly set and CTIS pressure check/adjustment cycle has been completed.</p>
16	DRIVELINE Unlock Button/ Indicator	<p>Press button to unlock HET Tractor driveline:</p> <p>Indicator flashes (green) when driveline is being adjusted.</p> <p>Indicator illuminates continuous (green) when driveline is adjusted as required.</p>

**Table 1. Air System Panel Controls and Indicators - Continued.**

Key	Control/ Indicator	Function
17	DRIVELINE Lock Button/ Indicator	<p>Press button to lock HET Tractor driveline:</p> <p>Indicator flashes (green) when driveline is being adjusted.</p> <p>Indicator illuminates continuous (green) when driveline is adjusted as required.</p>

**END OF WORK PACKAGE**

## **OPERATOR MAINTENANCE CENTER PANEL CONTROLS**

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### **CONTROLS AND INDICATORS INTRODUCTION**

This section displays the location and describes the use of center panel controls which are used in the operation of Heavy Equipment Transporter (HET) Tractor. Controls described in this section are the same for all vehicles, except where otherwise indicated.

### **LOCATION AND USE OF CONTROLS AND INDICATORS**

Know the location and proper use of every control and indicator before operating HET Tractor. Separate illustrations with keys are provided for learning about center panel controls.

Table 1. Center Panel Controls.

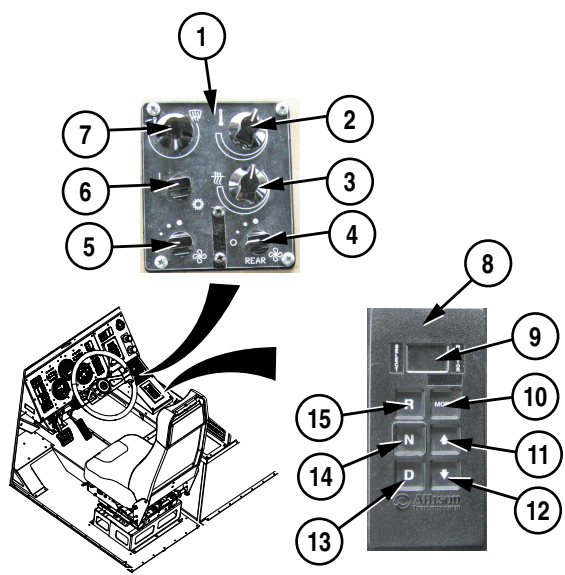


Figure 1. Center Panel Controls.

Key	Control/ Indicator	Function
1	Heating, Ventilation, and Air Conditioning (HVAC) Control Panel	Used to control the temperature of the cab.
2	Heater Temperature Control	Controls temperature level of air entering cab:  Turn control clockwise to increase temperature level.

**Table 1. Center Panel Controls - Continued.**

Key	Control/ Indicator	Function
		Turn control counterclockwise to decrease temperature level.
3	Fresh Air Control	Circulates air throughout cab. Controls the amount of outside air entering cab through the fresh air vent:  Turn control clockwise to open fresh air vents.  Turn control counterclockwise to shut the fresh air vents.
4	Rear Fan Control	<p><b>NOTE</b></p> <p>Rear fan control has 4 positions: Off (full counterclockwise), Low, Medium, and High (full clockwise).</p> <p>Turn control clockwise to increase speed of rear fan.</p> <p>Turn control counterclockwise to decrease speed of rear fan.</p>
5	Front Fan Control	<p><b>NOTE</b></p> <p>Front fan control has 4 positions: Off (full counterclockwise), low, medium, and high (full clockwise).</p> <p>Turn control clockwise to increase speed of front fan.</p> <p>Turn control counterclockwise to decrease of front fan.</p>
6	Air Conditioner (A/C) Control	Turns air conditioning ON or OFF (WP 0054):

Table 1. Center Panel Controls - Continued.

Key	Control/ Indicator	Function
		Turn control clockwise to turn A/C ON.
		Turn control counterclockwise to turn A/C OFF.
7	Cab/Defrost Vent Control	Controls amount of air directed to cab and defrost vents:  Turn control clockwise to decrease air flow from cab vents and increase air flow to defrost vents.  Turn control counterclockwise to increase air flow to cab vents and decrease air flow to defrost vents.
8	Transmission Range Selector	Used to select direction of vehicle travel and speed ranges for forward travel (WP 0064).
9	Digital Display Indicator	Displays highest attainable and current speed range, diagnostic codes logged, and transmission fluid level.
10	MODE Button	<b>NOTE</b>  In Diagnostic Display Mode, MODE button is used to page through diagnostic codes logged.
11	Up Arrow (Increase) Button	When in D (drive), allows operator to increase gear range being used by the transmission. Gear range 7 (seven) is highest available setting and is also default setting when D (Drive) is selected at startup.

*Table 1. Center Panel Controls - Continued.*

Key	Control/ Indicator	Function
12	Down Arrow (Decrease) Button	When in D (drive), allows operator to decrease gear range being used by the transmission.
13	D (Drive) Button	Used for all normal driving conditions. When HET Tractor is in motion, transmission will upshift and downshift automatically.
14	N (Neutral) Button	Used when starting HET Tractor, parking HET Tractor, or if HET Tractor is left unattended while engine is running.
15	R (Reverse) Button	Used for backing HET Tractor.

**END OF WORK PACKAGE**





OPERATOR MAINTENANCE  
TUNNEL PANEL CONTROLS - DRIVER SIDE

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of driver side tunnel panel controls which are used in the operation of Heavy Equipment Transporter (HET) Tractor. Controls described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HET Tractor. Separate illustrations with keys are provided for learning about driver side tunnel panel controls.

Table 1. Tunnel Panel Controls - Driver Side.

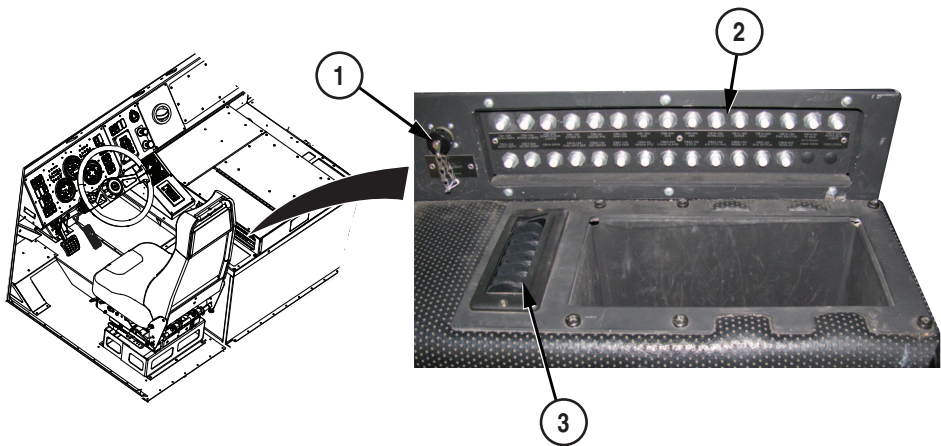


Figure 1. Tunnel Panel Controls - Driver Side.

Key	Control/ Indicator	Function
1	WORK LIGHT Connector	Provides power connection for work light when used inside cab.

**Table 1. Tunnel Panel Controls - Driver Side - Continued.**

Key	Control/ Indicator	Function
2	Circuit Breakers	Breakers open automatically to protect HET Tractor from electrical overloads. Push in circuit breaker buttons to reset.
3	Air Vent	Directs front fan air flow to driver.

**END OF WORK PACKAGE**

OPERATOR MAINTENANCE  
TUNNEL PANEL CONTROLS - PASSENGER SIDE

CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of passenger side tunnel panel controls which are used in the operation of Heavy Equipment Transporter (HET) Tractor. Controls described in this section are the same for all vehicles, except where otherwise indicated.

LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HET Tractor. Separate illustrations with keys are provided for learning about passenger side tunnel panel controls.

Table 1. Tunnel Panel Controls - Passenger Side.

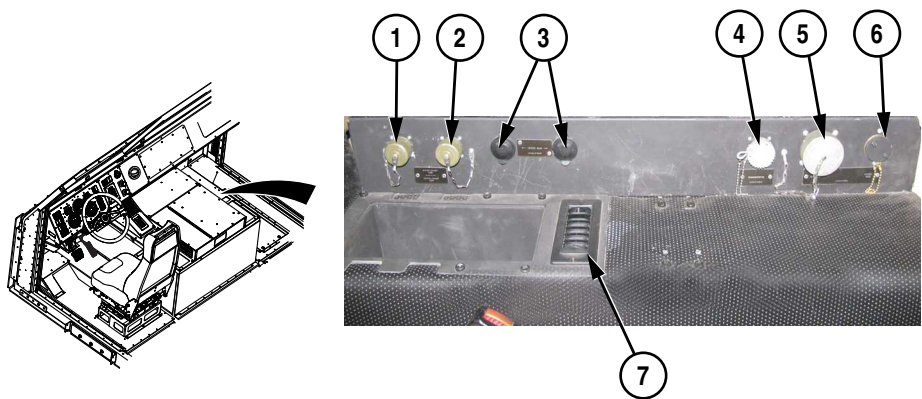


Figure 1. Tunnel Panel Controls - Passenger Side.

Key	Control/ Indicator	Function
1	24 VDC-20 AMP CB8 Receptacle	Supplies electrical power for 24-volt systems.

**Table 1. Tunnel Panel Controls - Passenger Side - Continued.**

Key	Control/ Indicator	Function
2	24 VDC-20 AMP CB7 Receptacle	Supplies electrical power for 24-volt systems.
3	12 VDC AUX Receptacle (Two)	Supplies electrical power to operate 12-volt systems.
4	DIAGNOSTIC Receptacle	Used for connecting test equipment for diagnosing problems with engine and transmission.
5	STE/ICE Receptacle	Used for connecting Simplified Test Equipment/Internal Combustion Engine (STE/ICE).
6	24 VDC AUX Receptacle	Supplies electrical power for 24-volt systems.
7	Air Vent	Directs front fan air flow to passenger.

**END OF WORK PACKAGE**

## **OPERATOR MAINTENANCE FRONT SEAT ADJUSTMENT CONTROLS**

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### **CONTROLS AND INDICATORS INTRODUCTION**

This section displays the location and describes the use of front seat adjustment controls which are used in the operation of Heavy Equipment Transporter (HET) Tractor. Controls described in this section are the same for all vehicles, except where otherwise indicated.

### **LOCATION AND USE OF CONTROLS AND INDICATORS**

Know the location and proper use of every control and indicator before operating HET Tractor. Separate illustrations with keys are provided for learning about front seat adjustment controls.

Table 1. Front Seat Adjustment Controls.

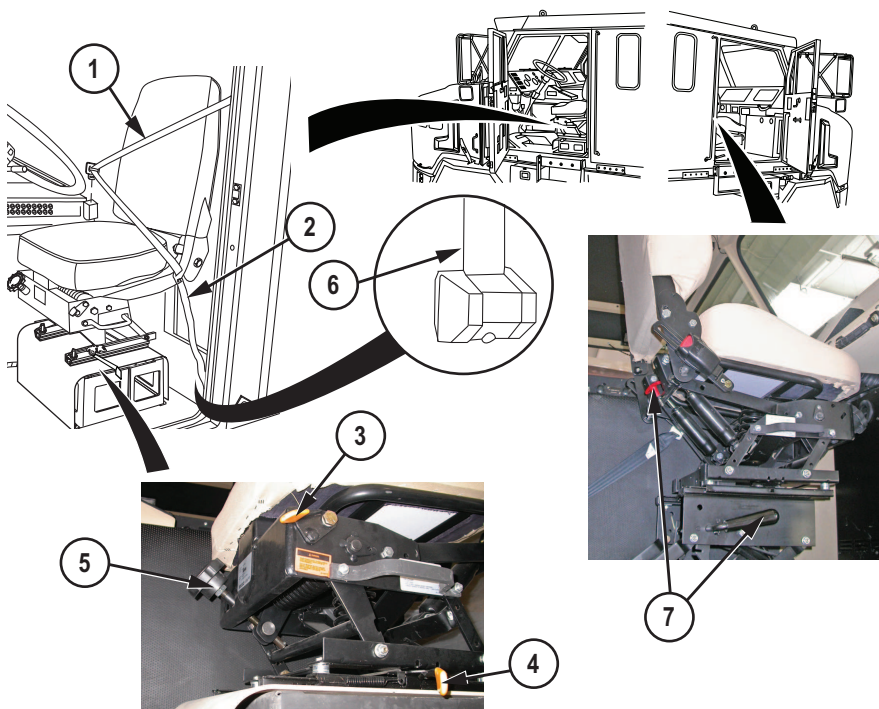


Figure 1. Front Seat Adjustment Controls.

Key	Control/ Indicator	Function
1	Seat Belt/ Shoulder Harness	Secures personnel in seat.
2	Tether Strap	Secures seat to cab frame, restraining excess movement.

**Table 1. Front Seat Adjustment Controls - Continued.**

<b>Key</b>	<b>Control/ Indicator</b>	<b>Function</b>
3	Height Adjustment Control	Allows up or down seat movement.
4	Forward/ Backward Adjustment Control	Allows forward or backward seat adjustment.
5	Ride Adjustment Control	Adjusts seat tension/ride firmness:  Turn ride adjustment control clockwise to decrease cushion firmness.  Turn ride adjustment control counterclockwise to increase cushion firmness.
6	Seat Belt Retractor	Locks seat belt in event of accident and reels in/stows seat belt when not in use.
7	Seat Lift Controls (passenger seat only)	Allows passenger seat to lift and move forward to allow access to and from rear seat.

**END OF WORK PACKAGE**





## **OPERATOR MAINTENANCE WINCH STATION CONTROLS AND INDICATORS**

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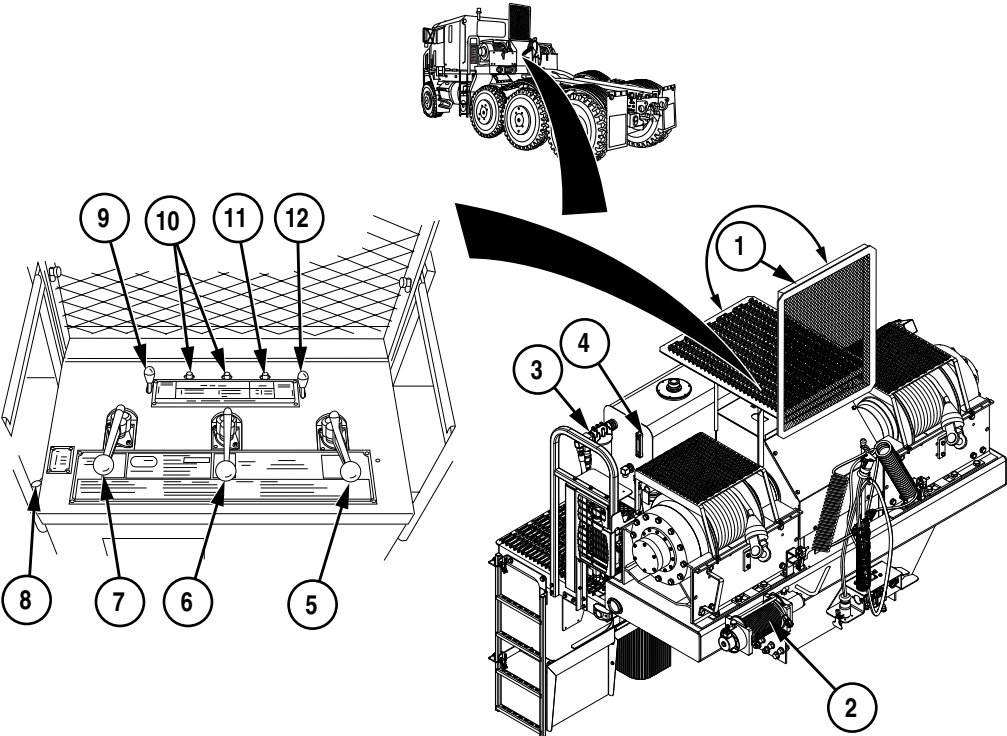
### **CONTROLS AND INDICATORS INTRODUCTION**

This section displays the location and describes the use of winch station controls and indicators which are used in the operation of Heavy Equipment Transporter (HET) Tractor. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

### **LOCATION AND USE OF CONTROLS AND INDICATORS**

Know the location and proper use of every control and indicator before operating HET Tractor. Separate illustrations with keys are provided for learning about winch station controls and indicators.

**Table 1. Winch Station Controls and Indicators.**



*Figure 1. Winch Station Controls and Indicators.*

Key	Control/ Indicator	Function
1	Personnel Guard	Two-position guard protects operator during winch operation (WP 0058).
2	Auxiliary Winch Manual Kickout Control	Used to engage and disengage auxiliary winch kickout:

**Table 1. Winch Station Controls and Indicators - Continued.**

Key	Control/ Indicator	Function
<p style="text-align: center;"><b>NOTE</b></p> <p>When auxiliary winch manual kickout is disengaged, winch drum will spool freely and cable can be payed out by hand.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>When auxiliary winch manual kickout is engaged, winch operation is controlled from AUXILIARY WINCH control.</p>		
3	Hydraulic Oil Sampling Valve	Used to take samples of hydraulic oil.
4	OIL LEVEL Sight Glass	<p style="text-align: center;"><b>NOTE</b></p> <p>Fluid level should be between top (FULL) and bottom (LOW) of two sight glasses.</p>
5	DRIVER SIDE WINCH Control	<p style="text-align: center;"><b>NOTE</b></p> <p>DRIVER SIDE WINCH Control will operate only when DRIVER SIDE WINCH KICKOUT is engaged.</p>
6	AUXILIARY WINCH Control	Used to pay out and reel in auxiliary winch cable when auxiliary winch manual kickout is engaged.
7	PASSENGER SIDE WINCH Control	<p style="text-align: center;"><b>NOTE</b></p> <p>PASSENGER SIDE WINCH control will operate only when PASSENGER SIDE WINCH KICKOUT is engaged.</p>
8	CABLE HOLD DOWN Control	Two-position lever used to engage and disengage cable tensioner on main winches:

**Table 1. Winch Station Controls and Indicators - Continued.**

Key	Control/ Indicator	Function
		Set control to ON when reeling in winch cable to ensure cable spools properly onto drum.
		Set control to OFF when paying out winch cable with auxiliary winch.
9	PASSENGER SIDE WINCH KICKOUT Control	<p>Two-position switch used to engage and disengage passenger side winch kickout:</p> <p>Pull control back to disengage PASSENGER SIDE WINCH KICKOUT. Winch drum will spool freely and winch cable can be payed out using auxiliary winch.</p> <p>Push control forward to engage PASSENGER SIDE WINCH KICKOUT. Winch cable is payed out or reeled in by using PASSENGER SIDE WINCH control.</p>
10	ENGINE SPEED CONTROL Switch (Two)	<p><b>NOTE</b></p> <p>There are two ENGINE SPEED CONTROL switches; HIGH ENGINE IDLE/LOW ENGINE IDLE (left) switch and PUSH TO LOCK ENGINE @ HIGH IDLE (right) switch.</p> <p>When two-position HIGH ENGINE IDLE/LOW ENGINE IDLE (left) switch is set to LOW ENGINE IDLE position, engine operates at normal idle (low) rpm.</p> <p>When HIGH ENGINE IDLE/LOW ENGINE IDLE (left) switch is set to HIGH ENGINE IDLE position and two-position momentary PUSH TO LOCK ENGINE @ HIGH IDLE (right)</p>

**Table 1. Winch Station Controls and Indicators - Continued.**

Key	Control/ Indicator	Function
		switch is pushed and released, engine operates at 1500 (high) rpm.
11	WINCH SPEED CONTROL Switch	Two-position (LOW/HIGH) switch used to control pay out/reel in speed of main winches.
12	DRIVER SIDE WINCH KICKOUT Control	Two-position switch used to engage and disengage driver side winch kickout:  Pull control back to disengage DRIVER SIDE WINCH KICKOUT. Winch drum will spool freely and winch cable can be payed out using auxiliary winch.  Push control forward to engage DRIVER SIDE WINCH KICKOUT. Winch cable is payed out or reeled in by using DRIVER SIDE WINCH control.

**END OF WORK PACKAGE**



## OPERATOR MAINTENANCE FIFTH WHEEL CONTROLS

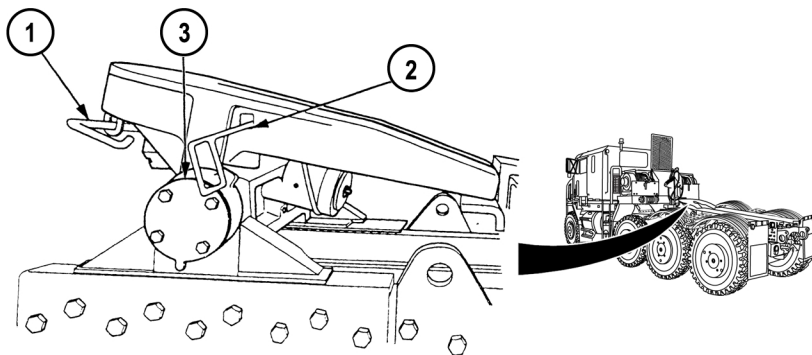
### CONTROLS AND INDICATORS INTRODUCTION

This section displays the location and describes the use of fifth wheel controls which are used in the operation of Heavy Equipment Transporter (HET) Tractor. Controls in this section are the same for all vehicles, except where otherwise indicated.

### LOCATION AND USE OF CONTROLS AND INDICATORS

Know the location and proper use of every control and indicator before operating HET Tractor. Separate illustrations with keys are provided for learning about fifth wheel controls.

**Table 1. Fifth Wheel Controls.**



**Figure 1. Fifth Wheel Controls.**

Key	Control/ Indicator	Function
1	Primary Lock Release Handle	Used to open fifth wheel coupler jaws. Coupler jaws open when handle is pulled.

**Table 1. Fifth Wheel Controls - Continued.**

Key	Control/ Indicator	Function
2	Secondary Lock Release Handle	Used to unlock fifth wheel coupler jaws and allows coupler jaws to be opened with primary lock release handle. Coupler jaws unlock when handle is pulled.
3	Lockout	<p>Used to control pivot (roll) motion of fifth wheel. Lockouts (one on each side of fifth wheel) have three settings:</p> <p>FULL LOCK - Inhibits fifth wheel from pivoting (rolling) side to side.</p> <p>HALF LOCK - Fifth wheel is able to pivot (roll) three degrees side to side.</p> <p>NO LOCK - Fifth wheel is able to pivot (roll) its full range of six degrees side to side.</p>

**END OF WORK PACKAGE**



**OPERATOR MAINTENANCE  
EXTERIOR-MOUNTED CONTROLS AND INDICATORS - DRIVER SIDE**

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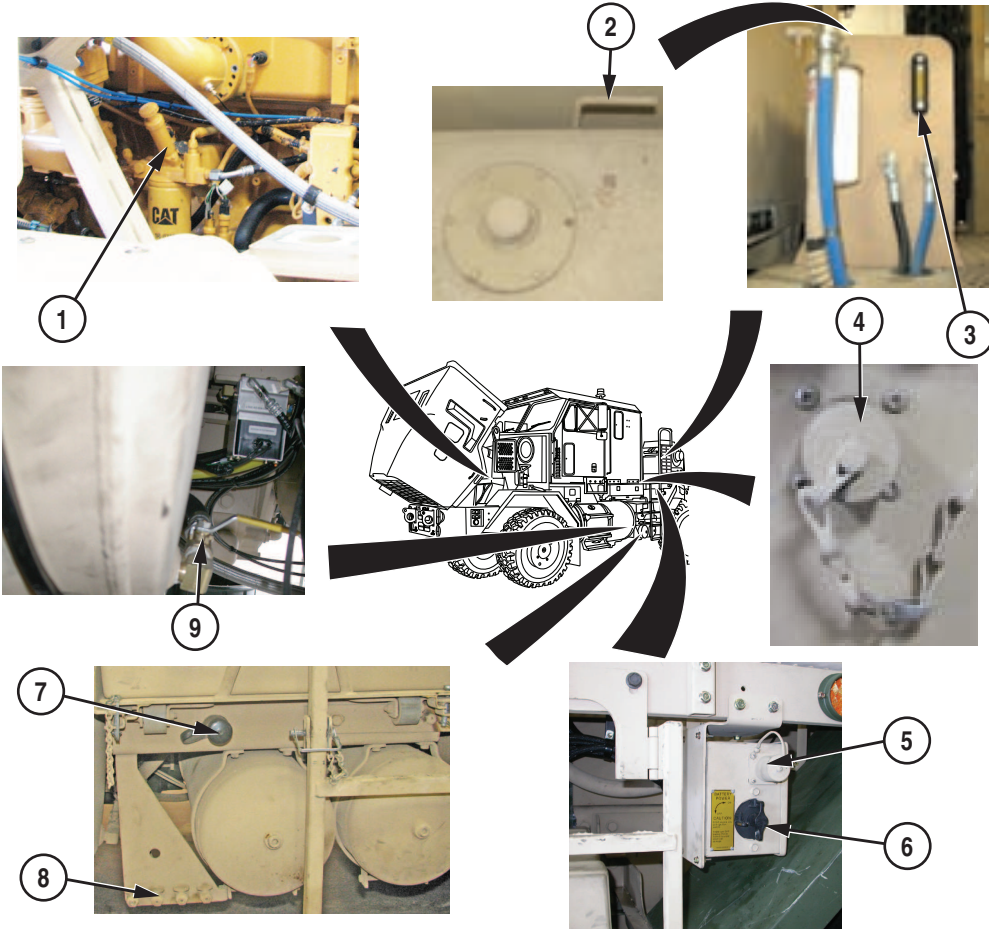
**CONTROLS AND INDICATORS INTRODUCTION**

This section displays the location and describes the use of driver side exterior-mounted controls and indicators which are used in the operation of Heavy Equipment Transporter (HET) Tractor. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

**LOCATION AND USE OF CONTROLS AND INDICATORS**

Know the location and proper use of every control and indicator before operating HET Tractor. Separate illustrations with keys are provided for learning about driver side exterior-mounted controls and indicators.

**Table 1. Exterior-Mounted Controls and Indicators - Driver Side.**



**Figure 1. Exterior-Mounted Controls and Indicators - Driver Side.**

Key	Control/ Indicator	Function
1	Fuel Primer Pump	Hand pump, used after fuel system maintenance, which supplies fuel to fuel lines.

**Table 1. Exterior-Mounted Controls and Indicators - Driver Side - Continued.**

Key	Control/ Indicator	Function
2	Transfer Case Neutral Engage Lever	Shifts transfer case into neutral:  Pull out transfer case neutral engage lever to shift transfer case into neutral.  Push in transfer case neutral engage lever to reengage transfer case to drivetrain.
3	Hydraulic Oil Sight Glass	Indicates oil level in hydraulic reservoir.
4	Work Light Connector	Provides power connection for work light.
5	NATO Power Receptacle	Used when standard generator or power supply is not available. A cable connects from vehicle to vehicle.
6	Battery Disconnect Switch	When in ON position, power is available to control modules and electrical system. When in OFF position, battery does not run down due to control module load.
7	Pneumatic Air Chuck	Used for pneumatic tools and inflating tires when required. HET Tractor must be running to keep air reservoir at required pressure.
8	Air Reservoir Drain Valves	Used to drain air from reservoirs.

**Table 1. Exterior-Mounted Controls and Indicators - Driver Side - Continued.**

Key	Control/ Indicator	Function
9	Driver Side Fuel Shutoff Valve Control	<p>Isolates driver side fuel tank from passenger side fuel tank:</p> <p>Set driver side fuel shutoff valve control to closed position (shown) during side slope operation when driver side of HET Tractor is higher than passenger side.</p> <p>Set driver side fuel shutoff valve control to open position in all other instances.</p>

**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE  
EXTERIOR-MOUNTED CONTROLS AND INDICATORS - PASSENGER SIDE**

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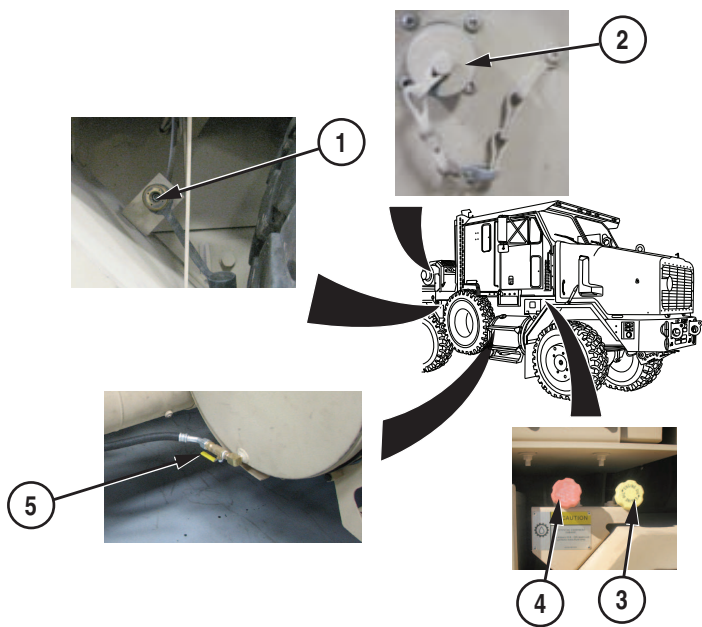
**CONTROLS AND INDICATORS INTRODUCTION**

This section displays the location and describes the use of passenger side exterior-mounted controls and indicators which are used in the operation of Heavy Equipment Transporter (HET) Tractor. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

**LOCATION AND USE OF CONTROLS AND INDICATORS**

Know the location and proper use of every control and indicator before operating HET Tractor. Separate illustrations with keys are provided for learning about passenger side exterior-mounted controls and indicators.

**Table 1. Exterior-Mounted Controls and Indicators - Passenger Side.**



*Figure 1. Exterior-Mounted Controls and Indicators - Passenger Side.*

Key	Control/ Indicator	Function
1	Pneumatic Air Chuck	Used for pneumatic tools and inflating tires when required. HET Tractor must be running to keep air reservoir at required pressure.
2	Work Light Connector	Provides power connection for work light.
3	Engine Oil Dipstick	Indicates engine oil level.

**Table 1. Exterior-Mounted Controls and Indicators - Passenger Side - Continued.**

Key	Control/ Indicator	Function
		Turn handle of engine oil dipstick counterclockwise to release from engine oil dipstick tube and obtain measurement.
		Fully insert engine oil dipstick into engine oil dipstick tube and turn handle of engine oil dipstick clockwise to secure.
4	Transmission Oil Dipstick/ Dipstick Tube	Transmission oil dipstick indicates transmission oil level.
		Turn handle of transmission oil dipstick counterclockwise to release from transmission oil dipstick tube and obtain measurement.
		Fully insert transmission oil dipstick into transmission oil dipstick tube and turn handle of transmission oil dipstick clockwise to secure.
		Transmission oil dipstick tube provides location to add transmission fluid.
5	Passenger Side Fuel Shutoff Valve	Isolates passenger side fuel tank from driver side fuel tank.
		Move passenger side fuel shutoff valve handle to closed position only when required by maintenance practices.

**Table 1. Exterior-Mounted Controls and Indicators - Passenger Side - Continued.**

Key	Control/ Indicator	Function
		Move passenger side fuel shutoff valve handle clockwise to open position (shown) in all other instances.

**END OF WORK PACKAGE**



**OPERATOR MAINTENANCE  
M-8 CHEMICAL ALARM AND DECONTAMINATION UNIT CONTROLS**

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**CONTROLS AND INDICATORS INTRODUCTION**

This section displays the location and describes the use of M-8 Chemical Alarm kit controls which are used in the operation of Heavy Equipment Transporter (HET) Tractor. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

**LOCATION AND USE OF CONTROLS AND INDICATORS**

Know the location and proper use of every control and indicator before operating HET Tractor. Separate illustrations with keys are provided for learning about M-8 Chemical Alarm kit controls.

Table 1. M-8 Chemical Alarm Controls.

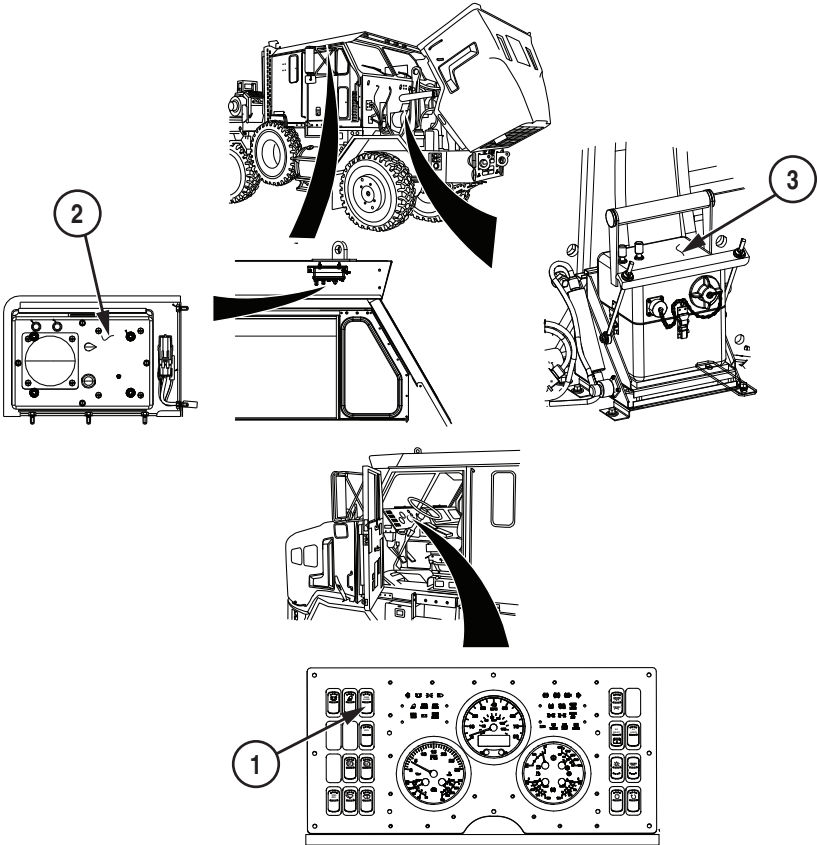


Figure 1. M-8 Chemical Alarm Controls.

Key	Control/ Indicator	Function
1	M-8 Chemical Alarm Switch	Two-position switch controls M-8 chemical alarm. Up position turns M-8 chemical alarm on, down position turns M-8 chemical alarm off. (Switch only active if M-8 chemical alarm kit is installed).

*Table 1. M-8 Chemical Alarm Controls - Continued.*

Key	Control/ Indicator	Function
2	M-8 Chemical Alarm	Sounds alarm when chemicals are detected.
3	Chemical Detector	Detects presence of chemicals in the air.

END OF WORK PACKAGE



**OPERATOR MAINTENANCE  
MAIN INSTRUMENT PANEL CONTROLS AND INDICATORS**

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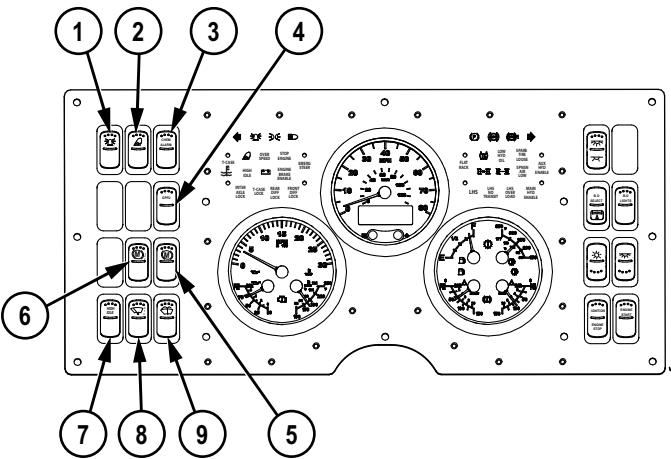
**CONTROLS AND INDICATORS INTRODUCTION**

This section displays the location and describes the use of main instrument panel controls and indicators which are used in the operation of Heavy Equipment Transporter (HET) Tractor. Controls and indicators described in this section are the same for all vehicles, except where otherwise indicated.

**LOCATION AND USE OF CONTROLS AND INDICATORS**

Know the location and proper use of every control and indicator before operating HET Tractor. Separate illustrations with keys are provided for learning about main instrument panel controls and indicators.

**Table 1. Main Instrument Panel Controls and Indicators.**



*Figure 1. Main Instrument Panel Controls and Indicators.*

Key	Control/ Indicator	Function
1	Beacon Light Switch	Two-position switch turns beacon light on/off:  Push switch up to turn beacon light on.  Push switch down to turn beacon light off.
2	Work Lights Switch	Two-position switch turns work lights on/off:  Push switch up to turn work lights on.  Push switch down to turn work lights off.

**Table 1. Main Instrument Panel Controls and Indicators - Continued.**

Key	Control/ Indicator	Function
3	CHEM ALARM Switch	Two-position switch turns chemical alarm on/off:  Push switch up to turn chemical alarm on.  Push switch down to turn chemical alarm off.
4	GPFU Switch	Two-position switch turns GPFU on/off:  Push switch up to turn GPFU on.  Push switch down to turn GPFU off.
5	Engine Brake On/Off Switch	Two-position switch turns engine brake on/off:  <b>NOTE</b>  The amount of engine braking provided is de- pendant on the position of the engine brake high/ medium/low switch.  Push switch down to turn engine brake off.
6	Engine Brake High/Medium/ Low Switch	<b>NOTE</b>  Engine brake high/medium/low switch becomes active when engine brake on/off switch is set to on position.  (1) - High position (full up) provides maximum engine braking.

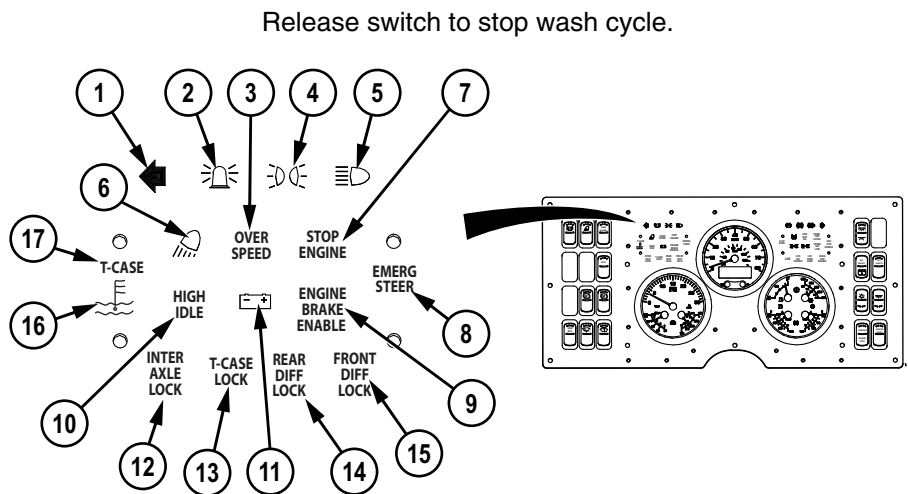
**Table 1. Main Instrument Panel Controls and Indicators - Continued.**

Key	Control/ Indicator	Function
		(2) - Medium position (center) provides less engine braking.
		(3) - Low position (full down) provides least amount of engine braking.
7	HIGH IDLE Switch	Two-position switch turns high idle on/off:  Push switch up to turn high idle on.  Push switch down to turn high idle off.
8	Windshield Wiper Switch	Three-position switch operates windshield wipers:  (0) - Full up position turns on windshield wipers to high speed.  (1) - Center position turns on windshield wipers to low speed.  (2) - Full down position turns windshield wipers off.
9	Windshield Washer Switch	Momentary switch operates the windshield washer:  Press and hold switch to spray washer fluid on windshield.



**Table 1. Main Instrument Panel Controls and Indicators - Continued.**

Key	Control/ Indicator	Function
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**Figure 2. Main Instrument Panel Controls and Indicators.**

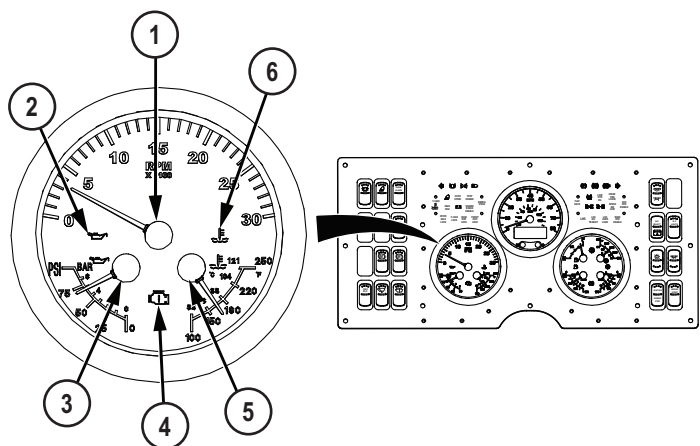
1	Left Turn Indicator	Flashes (green) when left turn signal is operating.
2	Beacon Light Indicator	Illuminates (green) when beacon lights are turned on.
3	OVERSPEED Indicator	Illuminates (red) when engine speed exceeds 2,350 RPM.
4	Clearance Light Indicator	Illuminates (green) when clearance lights are turned on.
5	High Beam Indicator	Illuminates (blue) when vehicle headlights are on high beam setting.

**Table 1. Main Instrument Panel Controls and Indicators - Continued.**

Key	Control/ Indicator	Function
6	Work Lights Indicator	Illuminates (green) when work lights are turned on.
7	STOP ENGINE Indicator	Illuminates (red) when oil pressure is very high or low, when intake manifold air temperature is very high, when coolant temperature is very high or when coolant level is very low.
8	EMERGENCY STEER Indicator	Not used in HET Tractor.
9	ENGINE BRAKE ENABLE Indicator	Illuminates (green) when engine brake is activated.
10	HIGH IDLE Indicator	Illuminates (green) when engine high idle is activated.
11	Charging System Indicator	Illuminates when (amber) alternator is in charging state.
12	INTERAXLE LOCK Indicator	<p style="text-align: center;"><b>NOTE</b></p> <p>Each higher lock level is inclusive of previous level.</p>
13	T-CASE LOCK Indicator	Illuminates (green) when transfer case lockup is added to interaxle lockup (drivetrain lock level 2) as required by the current CTIS terrain setting and transmission range selection or when drivetrain lock level 2 is invoked manually.

**Table 1. Main Instrument Panel Controls and Indicators - Continued.**

Key	Control/ Indicator	Function
14	REAR DIFF LOCK Indicator	Illuminates (green) when rear differential lockup is added to interaxle lockup and T-case lockup (drivetrain lock level 3) as required by the current CTIS terrain setting and transmission range selection or when drivetrain lock level 3 is invoked manually.
15-17	N/A	Not Used in HET Tractor.



**Figure 3. Main Instrument Panel Controls and Indicators.**

1	Tachometer	Indicates engine operating speed (RPM x 100).
2	Low Oil Pressure Indicator	Illuminates (red) when low oil pressure fault code is logged.
3	Engine Oil Pressure Gauge	Indicates engine oil pressure.

Table 1. Main Instrument Panel Controls and Indicators - Continued.

Key	Control/ Indicator	Function
4	Check Engine Indicator	Illuminates (amber) when engine fault code is logged.
5	Coolant Temperature Gauge	Indicates engine coolant temperature.
6	High Coolant Temperature Indicator	Illuminates (red) when high engine coolant temperature fault code is logged.

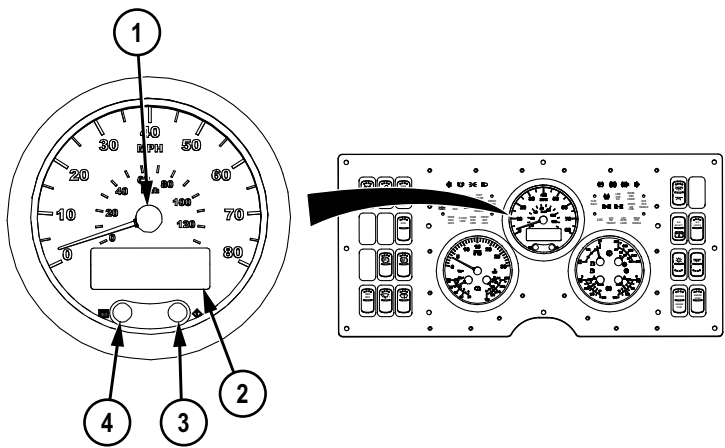


Figure 4. Main Instrument Panel Controls and Indicators.

1 Speedometer Indicates vehicle traveling speed.

2 Liquid Crystal Display (LCD) Message Center

**NOTE**

For detailed information on LCD message center and its functions, refer to instrument panel operation (WP 0051).

Table 1. Main Instrument Panel Controls and Indicators - Continued.

Key	Control/Indicator	Function
3	Mode (T) Button	<div><b>NOTE</b> For detailed information on mode T button and its functions, refer to instrument panel operation (WP 0051).</div>
4	Mode (M) Button	<div><b>NOTE</b> For detailed information on mode M button and its functions, refer to instrument panel operation (WP 0051).</div>

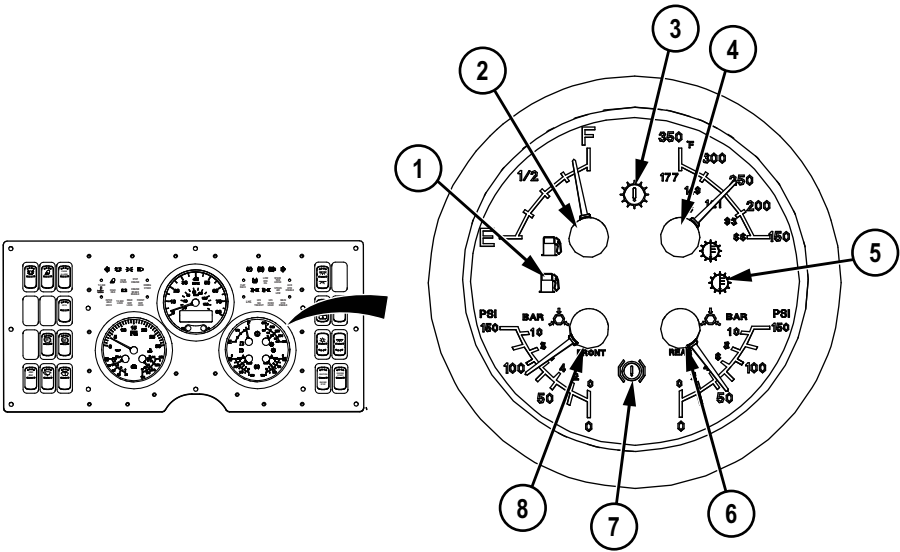


Figure 5. Main Instrument Panel Controls and Indicators.

1	Low Fuel Indicator	Illuminates (amber) when remaining fuel in tanks is at 1/8 of full or less.
2	Fuel Gauge	Indicates amount of fuel in tanks.

**Table 1. Main Instrument Panel Controls and Indicators - Continued.**

<b>Key</b>	<b>Control/ Indicator</b>	<b>Function</b>
3	Check Transmission Indicator	Illuminates (amber) when the Transmission Control Module (TCM) detects a problem.
4	Transmission Oil Temperature Gauge	Indicates transmission oil temperature.
5	High Transmission Temperature Indicator	Illuminates (red) when transmission sump temperature exceeds 250°F (121°C) or converter out temperature exceeds 350°F (177°C).
6	REAR Air Pressure Gauge	Indicates air pressure in rear air system.
7	Brake System Failure (Low Air Pressure) Indicator	Illuminates (red) when either FRONT air pressure gauge or REAR air pressure gauge falls below 60 psi (4.13 bar) or a fault input is received from brake controller.

Table 1. Main Instrument Panel Controls and Indicators - Continued.

Key	Control/Indicator	Function
8	FRONT Air Pressure Gauge	Indicates air pressure in front air system.

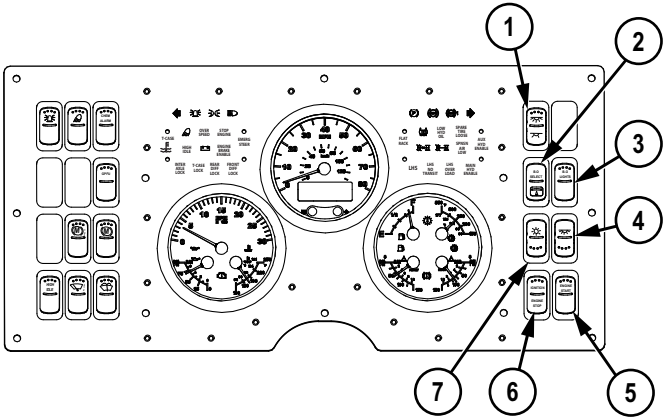
Diagram illustrating the Main Instrument Panel Controls and Indicators. The diagram shows a central instrument panel with various gauges and indicators. Arrows point from numbered circles (1-16) to specific indicators on the panel. 1 points to the Traction Control (TC) indicator. 2 points to the Parking Brake (P) indicator. 3 points to the Vehicle ABS indicator. 4 points to the Spare Tire Loose indicator. 5 points to the Auxiliary Hydraulic Enable indicator. 6 points to the Main Hydraulic Enable indicator. 7 points to the Low Hydraulic Oil indicator. 8 points to the Spare Tire Loose indicator. 9 points to the Auxiliary Hydraulic Enable indicator. 10 points to the Main Hydraulic Enable indicator. 11 points to the LHS Over Load indicator. 12 points to the LHS No Transit indicator. 13 points to the LHS indicator. 14 points to the LHS indicator. 15 points to the LHS indicator. 16 points to the Flat Rack indicator.

Figure 6. Main Instrument Panel Controls and Indicators.

1	Automatic Traction Control (ATC) Indicator	Flashes (amber) when traction control is activated.
2	Parking Brake Indicator	Illuminates (red) when parking brake is engaged.
3	Vehicle ABS Indicator	Illuminates (amber) when vehicle ABS fails.

**Table 1. Main Instrument Panel Controls and Indicators - Continued.**

Key	Control/ Indicator	Function
4	Trailer ABS Indicator	Illuminates (amber) when trailer ABS fails.
5	Right Turn Indicator	Flashes (green) when right turn signal is operating.
6	MAIN HYD ENABLE Indicator	Illuminates (green) when winch PTO enable switch is pushed up to on position.
7-16	N/A	Not Used in HET Tractor.



**Figure 7. Main Instrument Panel Controls and Indicators.**

1	Dimmer Switch	Three-position momentary switch adjusts backlighting for instrument panel, switches, transmission range selector, and HVAC panel:
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**Table 1. Main Instrument Panel Controls and Indicators - Continued.**

Key	Control/ Indicator	Function
		<b>NOTE</b>  Pressing and holding switch in upward position for three seconds will increase light intensity to 100 percent.
		<b>NOTE</b>  Pressing and holding switch in downward position for three seconds will decrease light intensity to 10 percent.
2	B.O. SELECT Switch	<b>NOTE</b>  Safety lock on B.O. SELECT switch locks switch in on position.  <b>NOTE</b>  Setting the B.O. SELECT switch to on position disables the master lighting switch (all functions including service drive lights, brake lights, turn signals, and emergency flashers), work light switch, beacon light switch, dome light switch, city horn switch, and reverse alarm.  Push switch down to off position to deselect blackout mode.
3	B.O. LIGHTS Switch	<b>NOTE</b>  B.O. SELECT switch must be set to on position before blackout lights will function.  Full down - turns blackout composite lights and blackout headlights off.  Center (middle) - blackout composite lights illuminate.

Table 1. Main Instrument Panel Controls and Indicators - Continued.

Key	Control/ Indicator	Function
		Full up - blackout composite lights illuminate and blackout headlights illuminate.
4	Dome Light Switch	<div><b>NOTE</b> Cab interior lighting will not operate when B.O. SELECT switch is set to on position.</div> <div>Push switch up to turn cab interior lighting on.</div> <div>Push switch down to turn cab interior lighting off.</div>
5	ENGINE START Switch	<div><b>NOTE</b> <b>For Troubleshooting Procedures Only:</b> Follow engine start procedures (WP 0045) exactly. Do not push service brake pedal until engine is started. This allows time for self-diagnostic tests to take place. Pushing service brake pedal before engine is started introduces a false ABS fault code.</div> <div>Push switch up to start engine.</div> <div>Release switch once engine has started or after 15 seconds (whichever comes first).</div>
6	IGNITION/ENGINE STOP Switch	<div><b>NOTE</b> <b>For Troubleshooting Procedures Only:</b> Follow engine start procedures (WP 0045) exactly. Do not push service brake pedal until 15 seconds after pushing IGNITION/ENGINE STOP switch up to IGNITION position. This allows time for self-diagnostic tests to take place. Pushing service</div>

**Table 1. Main Instrument Panel Controls and Indicators - Continued.**

Key	Control/ Indicator	Function
		brake pedal before 15 seconds introduces a false ABS fault code.
		Push switch down to remove power from cab instrument panels and gauges and shut engine off (WP 0050) (as applicable).
7	Master Lighting Switch	<div><b>NOTE</b> Master lighting switch will not operate when B.O. SELECT switch is set to on position.</div> <div>Full down - off.</div> <div>Center (middle) - clearance lights and parking lights illuminate.</div> <div>Full up - clearance lights, parking lights, and headlights illuminate.</div>

**END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE DECALS AND DATA PLATES

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### INITIAL SETUP:

Not Applicable

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### NOTE

Pay close attention to information provided within CAUTIONS, and WARNINGS on decals, labels, and stencils.

1. The following tables provide illustrations and general locations for decals, data plates (labels), and stencils found on the Heavy Equipment Transporter (HET) Tractor:
  - Decals are affixed to the HET Tractor using adhesive.
  - Labels are plates affixed to the HET Tractor using rivets.
  - Stencils are painted on the HET Tractor.
2. Specific locations of these decals, labels, and stencils on HET Tractor can be found in the Stowage and Sign Guide. (WP 0085)

**Table 1. Vehicle Data Label.**

ILLUSTRATION				LOCATION			
<div> <div> MANUFACTURED BY OSHKOSH CORPORATION </div> <div> <div> <div>MODEL NO. M1010A1</div> <div>DATE OF MFG.</div> <div>VIN</div> <div>CONTRACT</div> <div>REC NO.</div> <div>ROH NO.</div> </div> <div> <div>DATE OF MFG.</div> <div>CUM. MILEAGE</div> <div>PRELIM. MILEAGE</div> <div>CUM. MILEAGE</div> <div>CUM. MILEAGE</div> <div>CUM. MILEAGE</div> </div> </div> </div>							
<div> <div> <div>AXLE</div> <div>GROSS WT.</div> <div>GROSS WT. W/HAIRC</div> <div>HAIRC</div> <div>TIRE</div> </div> <div> <div>FRONT</div> <div>20X10</div> <div>16.00 R 20</div> </div> <div> <div>FRONT</div> <div>20X10</div> <div>16.00 R 20</div> </div> <div> <div>SECOND INT.</div> <div>20X10</div> <div>16.00 R 20</div> </div> <div> <div>REAR</div> <div>20X10</div> <div>16.00 R 20</div> </div> </div>							
<div> <div>VEHICLE TYPE CLASS</div> <div>VEHICLE SPEED</div> <div>VEHICLE SPEED</div> <div>VEHICLE SPEED</div> <div>VEHICLE SPEED</div> <div>VEHICLE SPEED</div> </div>							
<div> <div> <div> <div>ENGINE</div> <div>TRANSMISSION</div> <div>TRANSFER CASE</div> <div>AXLE ASST 1</div> <div>AXLE ASST 2</div> <div>AXLE ASST 3</div> <div>AXLE ASST 4</div> </div> <div> <div>201001</div> <div>201002</div> <div>201004</div> <div>201000</div> <div>201001</div> <div>201002</div> <div>201003</div> </div> </div> </div>							
<div> <div> <div> <div>WARRANTY</div> <div>WARRANTY</div> <div>WARRANTY</div> <div>WARRANTY</div> <div>WARRANTY</div> <div>WARRANTY</div> </div> <div> <div>WARRANTY</div> <div>WARRANTY</div> <div>WARRANTY</div> <div>WARRANTY</div> <div>WARRANTY</div> <div>WARRANTY</div> </div> </div> </div>							
<div> <div> <div> <div>NOTICE</div> <div>NOTICE</div> <div>NOTICE</div> <div>NOTICE</div> <div>NOTICE</div> <div>NOTICE</div> </div> <div> <div>NOTICE</div> <div>NOTICE</div> <div>NOTICE</div> <div>NOTICE</div> <div>NOTICE</div> <div>NOTICE</div> </div> </div> </div>							

Figure 1. Vehicle Data Label.

Table 2. Pre Operational Maintenance Label.

ILLUSTRATION	LOCATION																																				
<div><table><tr><th>REF NO</th><th>IDENTIFICATION</th><th>SERVICE</th></tr><tr><td>1</td><td>ENGINE OIL</td><td>CHECK LEVEL</td></tr><tr><td>2</td><td>TRANSMISSION FLUID</td><td>CHECK LEVEL</td></tr><tr><td>3</td><td>RADIATOR FLUID</td><td>CHECK LEVEL</td></tr><tr><td>4</td><td>HYDRAULIC OIL</td><td>CHECK LEVEL</td></tr><tr><td>5</td><td>FUEL FILTER</td><td>CHECK FOR WATER &amp; DRAIN</td></tr><tr><td>6</td><td>CAB</td><td>CHECK FOR DAMAGE</td></tr><tr><td>7</td><td>MIRRORS</td><td>CHECK FOR DAMAGE</td></tr><tr><td>8</td><td>WINDSHIELD</td><td>CHECK FOR DAMAGE</td></tr><tr><td>9</td><td>WINDSHIELD WIPERS</td><td>CHECK FOR DAMAGE</td></tr><tr><td>10</td><td>TIRES</td><td>CHECK FOR DAMAGE</td></tr><tr><td>11</td><td>FIRE EXTINGUISHER</td><td>CHECK FOR DAMAGE</td></tr></table><p>CONSULT LUBRICATION ORDER NO 9-2320-427-13 FOR ADDITIONAL MAINTENANCE REQUIREMENTS</p><p>40103-20 19800</p></div>	REF NO	IDENTIFICATION	SERVICE	1	ENGINE OIL	CHECK LEVEL	2	TRANSMISSION FLUID	CHECK LEVEL	3	RADIATOR FLUID	CHECK LEVEL	4	HYDRAULIC OIL	CHECK LEVEL	5	FUEL FILTER	CHECK FOR WATER & DRAIN	6	CAB	CHECK FOR DAMAGE	7	MIRRORS	CHECK FOR DAMAGE	8	WINDSHIELD	CHECK FOR DAMAGE	9	WINDSHIELD WIPERS	CHECK FOR DAMAGE	10	TIRES	CHECK FOR DAMAGE	11	FIRE EXTINGUISHER	CHECK FOR DAMAGE	Inside driver side door. (WP 0085, Table 1)
REF NO	IDENTIFICATION	SERVICE																																			
1	ENGINE OIL	CHECK LEVEL																																			
2	TRANSMISSION FLUID	CHECK LEVEL																																			
3	RADIATOR FLUID	CHECK LEVEL																																			
4	HYDRAULIC OIL	CHECK LEVEL																																			
5	FUEL FILTER	CHECK FOR WATER & DRAIN																																			
6	CAB	CHECK FOR DAMAGE																																			
7	MIRRORS	CHECK FOR DAMAGE																																			
8	WINDSHIELD	CHECK FOR DAMAGE																																			
9	WINDSHIELD WIPERS	CHECK FOR DAMAGE																																			
10	TIRES	CHECK FOR DAMAGE																																			
11	FIRE EXTINGUISHER	CHECK FOR DAMAGE																																			

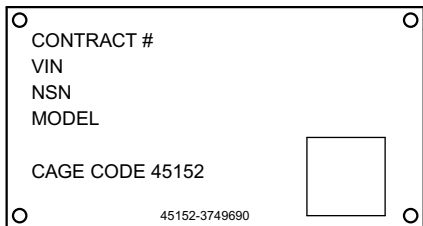
Figure 2. Pre Operational Maintenance Label.

Table 3. Shipping Data Label.

ILLUSTRATION	LOCATION
<div><p><b>NOTE</b></p><p>Shipping data label has two sides: Front of label shows data for HET Tractor without armor installed. Back of label shows data for HET Tractor with armor installed.</p></div> <div><p>The illustration shows the front of a shipping data label for a HET Tractor without armor. It features a side-view diagram of the vehicle with labels for 'CURB' at the front and rear, and 'CENTER OF GRAVITY LATERAL LOCATION ON VEHICLE CENTER'. Below the diagram, it lists 'MODEL: M1070A1' and provides fields for 'FRONT AXLE:', '3-REAR AXLES:', 'WEIGHT CURB', 'HEIGHT:', 'WIDTH:', and 'LENGTH:'. A small number '45152-380857' is at the bottom.</p></div> <p>Figure 3. Shipping Data Label (Front - W/O Armor).</p> <div><p>The illustration shows the back of a shipping data label for a HET Tractor with armor. It features a side-view diagram of the vehicle with labels for 'CURB' at the front and rear, and 'CENTER OF GRAVITY LATERAL LOCATION ON VEHICLE CENTER'. Below the diagram, it lists 'MODEL: M1070A1' and provides fields for 'FRONT AXLE:', '3-REAR AXLES:', 'WEIGHT CURB', 'HEIGHT:', 'WIDTH:', and 'LENGTH:'. A small number '45152-380857' is at the bottom.</p></div> <p>Figure 4. Shipping Data Label (Back - W/Armor).</p>	<p>Inside driver side door. (WP 0085, Table 1)</p>




**Table 4. Unit Identification Label.**

ILLUSTRATION	LOCATION
 <p>CONTRACT # VIN NSN MODEL</p> <p>CAGE CODE 45152</p> <p>45152-3749690</p>	Inside driver side door. (WP 0085, Table 1)

*Figure 5. Unit Identification Label.*

Inside driver side door. (WP 0085, Table 1)

**Table 5. Seat Belt WARNING Label.**

ILLUSTRATION	LOCATION
<div><p>Figure 6.     <i>Seat Belt WARNING Label.</i></p></div>	<p>Cab Interior (overhead). (WP 0085, Table 3)</p>

Cab Interior (overhead). (WP 0085, Table 3)

Table 6. Seat Belt WARNING Label.

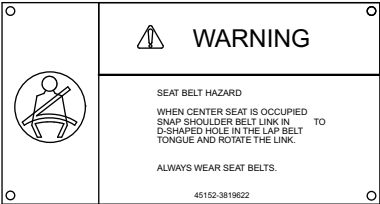
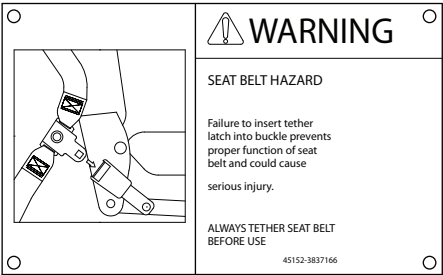
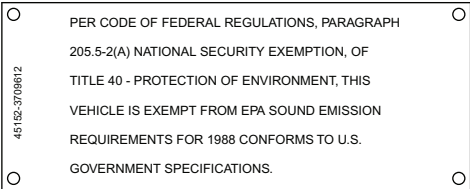
ILLUSTRATION	LOCATION
 <p>Figure 7. Seat Belt WARNING Label.</p>	Cab Interior (rear of doghouse). (WP 0085, Table 3)


Table 7. Seat Belt WARNING Label.

ILLUSTRATION	LOCATION
 <p>Figure 8. Seat Belt WARNING Label.</p>	Cab Interior (passenger side tunnel panel). (WP 0085, Table 3)


**Table 8. Noise Exemption Information Label.**

ILLUSTRATION	LOCATION
<div><p>45152-3709812</p><p>PER CODE OF FEDERAL REGULATIONS, PARAGRAPH 205.5-2(A) NATIONAL SECURITY EXEMPTION, OF TITLE 40 - PROTECTION OF ENVIRONMENT, THIS VEHICLE IS EXEMPT FROM EPA SOUND EMISSION REQUIREMENTS FOR 1988 CONFORMS TO U.S. GOVERNMENT SPECIFICATIONS.</p></div> <p><i>Figure 9. Noise Exemption Information Label.</i></p>	Cab Interior (transmission range selector housing). (WP 0085, Table 3)

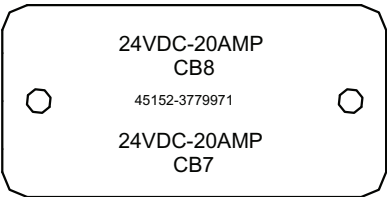
**Table 9. WORKLIGHT Label.**

ILLUSTRATION	LOCATION
<div><p>45152-3800576</p></div> <p><i>Figure 10. WORKLIGHT Label.</i></p>	Cab Interior (driver side tunnel panel). (WP 0085, Table 3)

**Table 10. Circuit Breaker Callout Label.**

ILLUSTRATION	LOCATION
<div><p><i>Figure 11. Circuit Breaker Callout Label.</i></p></div>	Cab Interior (driver side tunnel panel). (WP 0085, Table 3)

**Table 11. 24VDC-20AMP CB7/CB8 Label.**

ILLUSTRATION	LOCATION
<div><p><i>Figure 12. 24VDC-20AMP CB7/CB8 Label.</i></p></div>	Cab Interior (passenger side tunnel panel). (WP 0085, Table 3)

**Table 12. 12VDC/AUX Label.**

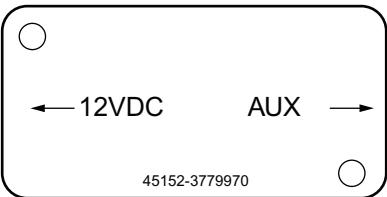
ILLUSTRATION	LOCATION
<div><p><i>Figure 13. 12VDC/AUX Label.</i></p></div>	Cab Interior (passenger side tunnel panel). (WP 0085, Table 3)

Table 13. DIAGNOSTIC Label.



ILLUSTRATION	LOCATION
 <p><i>Figure 14. DIAGNOSTIC Label.</i></p>	Cab Interior (passenger side tunnel panel). (WP 0085, Table 3)

Table 14. STE-ICE/24VDC AUX Label.

ILLUSTRATION	LOCATION
 <p><i>Figure 15. STE-ICE/24VDC AUX Label.</i></p>	Cab Interior (passenger side tunnel panel). (WP 0085, Table 3)

**Table 15. Height Adjustment Instructions Decal.**

ILLUSTRATION	LOCATION
<div><div><div>HEIGHT ADJUSTMENT</div><div>TO RAISE</div><div>*LIFT RELEASE LEVER * LIFT WEIGHT SO SEAT WILL RISE TO DESIRED HEIGHT * RELEASE LEVER TO LOCK</div><div>TO LOWER</div><div>*LIFT LEVER * SIT IN SEAT KEEPING WEIGHT CENTERED * WEIGHT BRINGS TO DESIRED LEVEL -- LOCK LEVER</div><div>NO. 507097</div></div></div> <div><p><i>Figure 16. Height Adjustment Instructions Decal.</i></p></div>	<p>Cab Interior (Driver Side and Passenger Side Seats). (WP 0085, Table 3)</p>

**Table 16. Seat Suspension WARNING Decal.**

ILLUSTRATION	LOCATION
<div><div><div><div>⚠ WARNING</div><div>SEAT SUSPENSION IS UNDER SPRING LOAD AND MAY CAUSE INJURY IF DISASSEMBLED.</div><div>DO NOT REMOVE BOLTS, EXCEPT THOSE USED TO MOUNT CUSHION, BACK ASSEMBLY OR SHOCK ABSORBER.</div><div>PN 506566</div></div></div></div> <div><p><i>Figure 17. Seat Suspension WARNING Decal.</i></p></div>	<p>Cab Interior (Driver Side Seat Only). (WP 0085, Table 3)</p>

Table 17. Seat Information Decal.

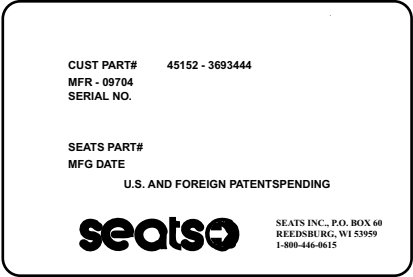
ILLUSTRATION	LOCATION
 <p><i>Figure 18. Seat Information Decal.</i></p>	Cab Interior (Driver Side and Passenger Side Seats). (WP 0085, Table 3)

Table 18. Ride Adjustment Decal.


ILLUSTRATION	LOCATION
 <p><i>Figure 19. Ride Adjustment Decal.</i></p>	Cab Interior (Driver Side and Passenger Side Seats). (WP 0085, Table 3)

Table 19. Sign Kit/Weight Indicator.

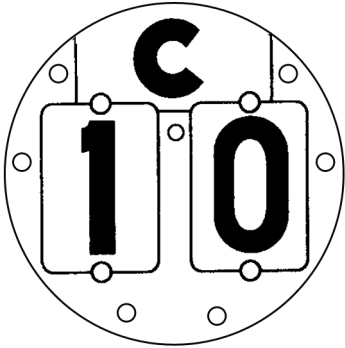
ILLUSTRATION	LOCATION
<div><p>Figure 20. Sign Kit/Weight Indicator.</p></div>	Front Exterior (passenger side grille). (WP 0085, Table 5)

Table 20. SERVICE Label.


ILLUSTRATION	LOCATIONS
<div><p>Figure 21. SERVICE Label.</p></div>	Front Exterior (passenger side gladhand). (WP 0085, Table 5)
	Rear Exterior (passenger side gladhand). (WP 0085, Table 9)



Table 21. EMERGENCY Label.


ILLUSTRATION	LOCATIONS
 <p>Figure 22. EMERGENCY Label.</p>	Front Exterior (driver side gladhand). (WP 0085, Table 5)
	Rear Exterior (driver side gladhand). (WP 0085, Table 9)

Table 22. Winch WARNING Decal.

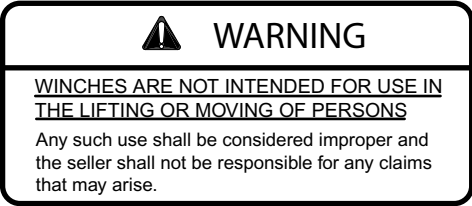
ILLUSTRATION	LOCATIONS
 <p>Figure 23. Winch WARNING Decal.</p>	Winch Control Panel/Platform (driver side winch). (WP 0085, Table 14)
	Winch Control Panel/Platform (auxiliary winch). (WP 0085, Table 14)
	Winch Control Panel/Platform (passenger side winch). (WP 0085, Table 14)

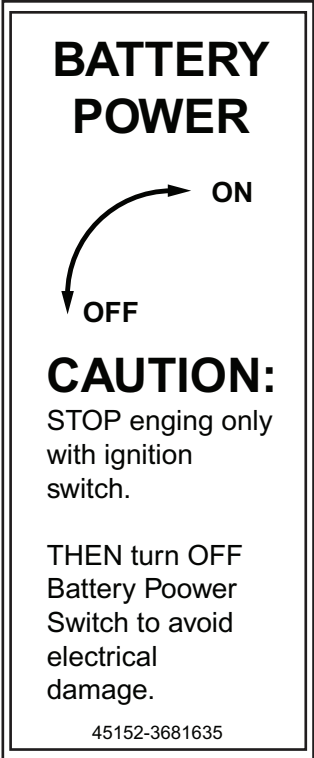
Table 23. Equipment Damage CAUTION Label.

ILLUSTRATION	LOCATION
<div></div>	Driver Side Exterior (battery box). (WP 0085, Table 7)

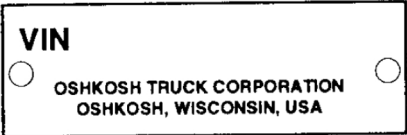
Table 24. Noise Hazard WARNING Label.

ILLUSTRATION	LOCATION
<div></div>	Driver Side Exterior (stowage box). (WP 0085, Table 7)

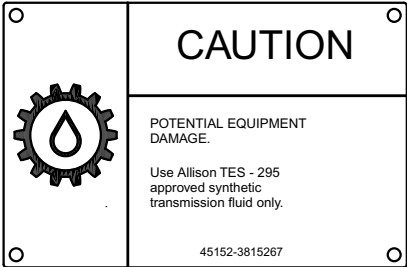
Table 25. Battery Power CAUTION Label.

ILLUSTRATION	LOCATION
<div><p><b>BATTERY POWER</b></p><p>ON</p><p>OFF</p><p><b>CAUTION:</b> STOP enging only with ignition switch.</p><p>THEN turn OFF Battery Poower Switch to avoid electrical damage.</p><p>45152-3681635</p></div> <p><i>Figure 26. Battery Power CAUTION Label.</i></p>	<p>Driver Side Exterior (Battery Disconnect Switch). (WP 0085, Table 7)</p>


**Table 26. Vehicle Identification Number (VIN) Label.**

ILLUSTRATION	LOCATION
<div><p><b>VIN</b></p><p>OSHKOSH TRUCK CORPORATION OSHKOSH, WISCONSIN, USA</p></div> <p><i>Figure 27. Vehicle Identification Number (VIN) Label.</i></p>	Driver Side Exterior (behind No. 1 axle wheel assembly). (WP 0085, Table 7)

**Table 27. Potential Equipment Damage CAUTION Label.**

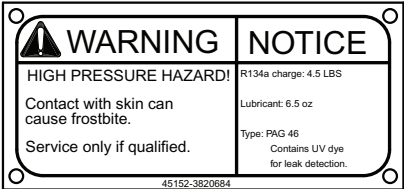
ILLUSTRATION	LOCATION
<div><p><b>CAUTION</b></p><p>POTENTIAL EQUIPMENT DAMAGE.</p><p>Use Allison TES - 295 approved synthetic transmission fluid only.</p><p>45152-3815267</p></div> <p><i>Figure 28. Potential Equipment Damage CAUTION Label.</i></p>	Passenger Side Exterior (transmission dipstick). (WP 0085, Table 8)

**Table 28. CAGE, P/N, and S/N Label.**

ILLUSTRATION	LOCATIONS
	Engine (above fuel priming pump) (WP 0085, Table 10).
	Transfer Case (bottom passenger side corner - front). (WP 0085, Table 11)
	Transmission (bottom passenger side corner - rear). (WP 0085, Table 12)

*Figure 29. CAGE, P/N, and S/N Label.*

**Table 29. High Pressure Hazard WARNING/NOTICE Decal.**

ILLUSTRATION	LOCATION
	Engine Compartment (driver side). (WP 0085, Table 10)

*Figure 30. High Pressure Hazard WARNING/NOTICE Decal.*

Table 30. Hot Radiator CAUTION Decal.

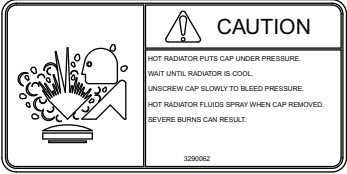
ILLUSTRATION	LOCATIONS
 <p>The illustration shows a rectangular decal with a double border. On the left is a pictogram of a person being sprayed by a radiator. On the right, the word 'CAUTION' is at the top with a triangle symbol. Below it, the text reads: 'HOT RADIATOR PUTS CAP UNDER PRESSURE. WAIT UNTIL RADIATOR IS COOL. UNSCREW CAP SLOWLY TO BLEED PRESSURE. HOT RADIATOR FLUIDS SPRAY WHEN CAP REMOVED. SEVERE BURNS CAN RESULT.' At the bottom right is the number '3290062'.</p>	<p>Engine Compartment (next to radiator cap). (WP 0085, Table 10)</p> <p>Engine Compartment (passenger side - overflow tank). (WP 0085, Table 10)</p>

Figure 31. Hot Radiator CAUTION Decal.

Table 31. Cooling Fan WARNING Decal.

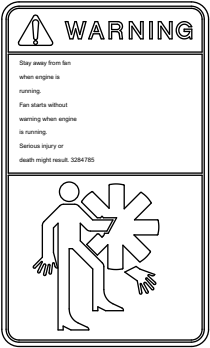
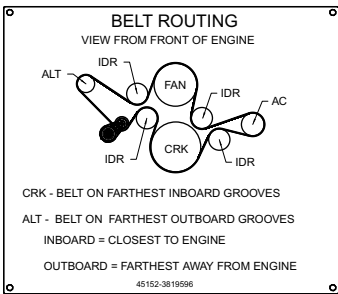
ILLUSTRATION	LOCATION
 <p>The illustration shows a rectangular decal with a double border. At the top, the word 'WARNING' is in a box with a triangle symbol. Below it, the text reads: 'Stay away from fan when engine is running. Fan starts without warning when engine is running. Serious injury or death might result. 3294785'. At the bottom is a pictogram of a person being struck by a fan blade.</p>	<p>Engine Compartment (driver and passenger side). (WP 0085, Table 10)</p>

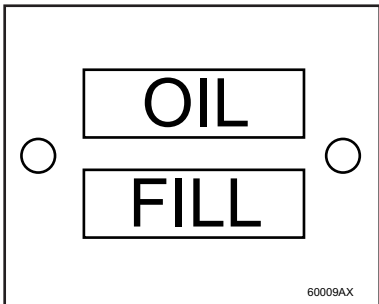
Figure 32. Cooling Fan WARNING Decal.

Table 32. Belt Routing Label.

ILLUSTRATION	LOCATION
<div><p><b>BELT ROUTING</b> VIEW FROM FRONT OF ENGINE</p><p>Diagram showing belt routing for an engine. The belt starts at the CRK (Crankshaft) pulley, goes to the FAN pulley, then to the AC (Alternator) pulley, and finally to the ALT (Alternator) pulley. The belt is shown on the farthest inboard and outboard grooves of each pulley. Labels include: ALT, IDR, FAN, IDR, AC, CRK, and IDR.</p><p>CRK - BELT ON FARTHEST INBOARD GROOVES ALT - BELT ON FARTHEST OUTBOARD GROOVES INBOARD = CLOSEST TO ENGINE OUTBOARD = FARTHEST AWAY FROM ENGINE</p><p>45152-3819596</p></div>	<p>Engine Compartment (passenger side). (WP 0085, Table 10)</p>

Engine Compartment (passenger side).  
(WP 0085, Table 10)

Table 33. Oil Fill Label.

ILLUSTRATION	LOCATION
<div><p>Diagram of an oil fill label. It consists of two rectangular boxes stacked vertically. The top box contains the word "OIL" and the bottom box contains the word "FILL". The boxes are flanked by two small circles. A small number 60009AX is at the bottom right of the diagram.</p></div> <p><i>Figure 34. Oil Fill Label.</i></p>	<p>Transfer Case (bottom passenger side corner - rear). (WP 0085, Table 11)</p>

Transfer Case (bottom passenger side  
corner - rear). (WP 0085, Table 11)

Table 34. Axle Information Label.

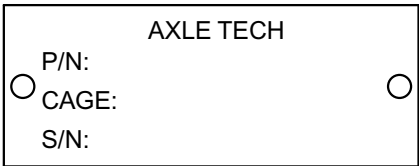
ILLUSTRATION	LOCATION
 <p>The illustration shows a rectangular label with the text "AXLE TECH" at the top. Below it, there are three lines of text: "P/N:", "CAGE:", and "S/N:". Each line is preceded by a small circle, and there is a larger circle to the right of the "CAGE:" line.</p>	Axle Housing. (WP 0085, Table 13)

Figure 35. Axle Information Label.

Table 35. Winch Controls Label.

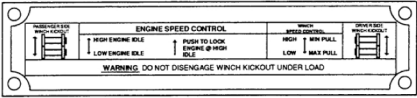
ILLUSTRATION	LOCATION
 <p>The illustration shows a rectangular label with a complex layout. It includes sections for "ENGINE SPEED CONTROL" with "HIGH ENGINE RLE" and "LOW ENGINE RLE" indicators, and "WINCH" with "WHEEL CONTROL" and "WHEEL PULL" indicators. A "WARNING" section at the bottom states "DO NOT DISENGAGE WINCH KICKOUT UNDER LOAD".</p>	Winch Control Panel. (WP 0085, Table 14)

Figure 36. Winch Controls Label.

Table 36. Winch Control Instructions Label.


ILLUSTRATION	LOCATION
 <p>The illustration shows a rectangular label with a complex layout. It includes sections for "WINCH CONTROL OPERATING INSTRUCTIONS" with numbered steps 1 through 6, and "WINCH CONTROL" with "WHEEL CONTROL" and "WHEEL PULL" indicators. A "WARNING" section at the bottom states "DO NOT DISENGAGE WINCH KICKOUT UNDER LOAD".</p>	Winch Control Panel. (WP 0085, Table 14)

Figure 37. Winch Control Instructions Label.



Table 37. Winch Control Instructions Label.

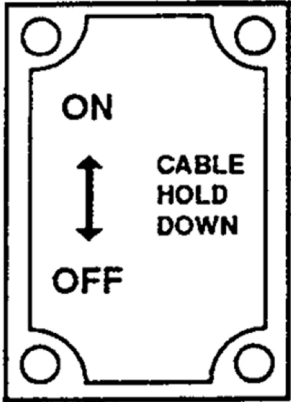
ILLUSTRATION	LOCATION
 <p>The illustration shows a rectangular label with rounded corners and four circular mounting holes at the corners. Inside the label, the word "ON" is at the top, "OFF" is at the bottom, and a vertical double-headed arrow is in the center. To the right of the arrow, the words "CABLE HOLD DOWN" are stacked vertically.</p>	Winch Control Panel. (WP 0085, Table 14)

Figure 38. Cable Hold Down Label.

Table 38. Winch Information Label.

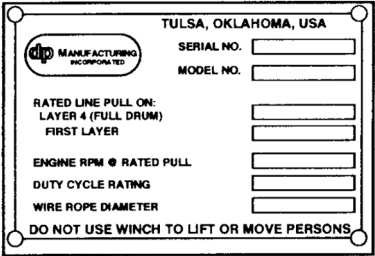
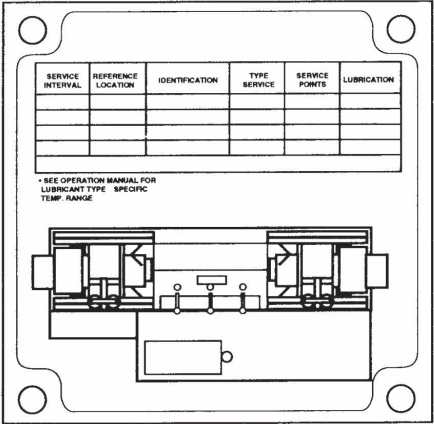
ILLUSTRATION	LOCATION
 <p>The illustration shows a rectangular label with rounded corners and four circular mounting holes at the corners. The label contains the following text and fields: "TULSA, OKLAHOMA, USA" at the top; "CWP MANUFACTURING INCORPORATED" in a logo; "SERIAL NO." followed by a blank line; "MODEL NO." followed by a blank line; "RATED LINE PULL ON: LAYER 4 (FULL DRUM) FIRST LAYER" followed by a blank line; "ENGINE RPM @ RATED PULL" followed by a blank line; "DUTY CYCLE RATING" followed by a blank line; "WIRE ROPE DIAMETER" followed by a blank line; and "DO NOT USE WINCH TO LIFT OR MOVE PERSONS." at the bottom.</p>	Driver Side and Passenger Side Winch Access Panel. (WP 0085, Table 14)

Figure 39. Winch Information Label.

Table 39. Winch Maintenance Label.

ILLUSTRATION	LOCATION
<div><p>Figure 40. Winch System Maintenance Label.</p></div>	Winch Control Access Panel. (WP 0085, Table 14)

END OF TASK

END OF WORK PACKAGE

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## OPERATOR MAINTENANCE GENERAL HEAVY EQUIPMENT TRANSPORTER (HET)-TRAILER OPERATING PROCEDURES

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### INITIAL SETUP:

#### Personnel Required

Operator and Assistant - - (2)

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### ON-ROAD TRACTOR DRIVING PROCEDURES (FORWARD)

#### NOTE

If HET Tractor has less than 500 miles (805 km), check controls and indicators more often during operation and listen for unusual noises or vibrations. Refer to appropriate troubleshooting procedures if problems are encountered.

1. Remove wheel chocks (1) and stow in stowage boxes (2).

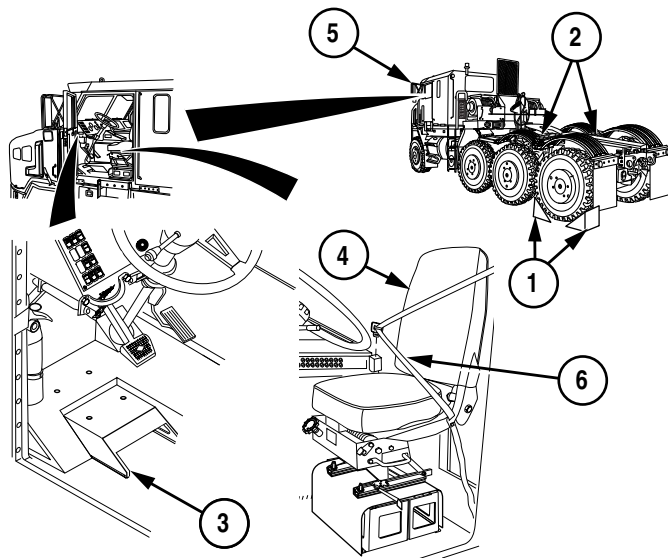


Figure 1. On-Road Tractor Driving Procedures (Forward).

2. Extend or stow foot rest (WP 0029) (3), as required.

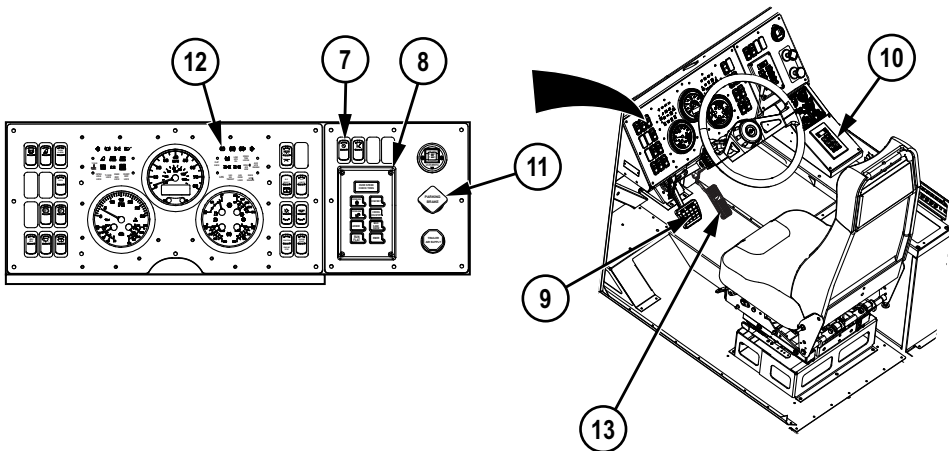
**ON-ROAD TRACTOR DRIVING PROCEDURES (FORWARD) - Continued**

3. Adjust driver's seat (WP 0030) (4), as required.
4. Adjust each rear view mirror (5) so back of HET Tractor and view of road can be seen.
5. Adjust driver's seat belt (WP 0031) (6), as required.

**CAUTION**

CTIS on/off switch should be in on position (down) at all times. Overspeed protection will not operate if switch is in off position (up) and tire pressures may not match driving speeds, resulting in unsafe driving conditions or tire damage.

6. Push CTIS on/off switch (7) down to on position.



*Figure 2. On-Road Tractor Driving Procedures (Forward).*

7. Start engine. (WP 0045)
8. Turn on lights (WP 0043) (as required).

**NOTE**

- Allow time for CTIS adjustment. When changing terrain/load settings, indicator lights within the button(s) chosen will flash (green) to indicate CTIS is checking and adjusting tire pressures and driveline lockups. Indicator lights will illuminate continuous (green) when tire pressures and driveline lockups are properly set.
- If it becomes necessary to disable CTIS, tires will have to be manually inflated or deflated.

**ON-ROAD TRACTOR DRIVING PROCEDURES (FORWARD) - Continued**

9. Set CTIS controller (WP 0052) (8) to appropriate load and terrain settings.

**WARNING**

Rapid or repeated operation of service brakes will consume compressed air supply and cause automatic spring brake application when pressure drops below 45 psi (310 kPa). Failure to follow proper service brake operating procedures may result in serious injury or death to personnel.

10. Apply service brake pedal (WP 0047) (9).
11. Set transmission range selector (WP 0064) (10) to appropriate gear range:
  - a. Use Drive (D) for normal/highway operation.
  - b. Use other gear ranges as needed for:
    - (1) Off road (WP 0072).
    - (2) Steep grades (WP 0067).
    - (3) Slippery conditions (WP 0068).
12. Push in PARKING BRAKE control (WP 0049) (11) to release parking brakes. Parking brake indicator (12) will go out.

**CAUTION**

The CTIS increases tire inflation pressure when HET Tractor speed exceeds the allowable speed for each setting. When an increase in speed is required, maintain the lower speed until the tires are re-inflated to the correct pressure, to prevent damage to tires. Failure to comply may result in damage to equipment.

**NOTE**

Check controls and indicators often during HET Tractor operation.

13. Release service brake pedal (WP 0047) (9) and slowly apply throttle pedal (WP 0013) (13) until HET Tractor reaches desired speed.

**WARNING**

Speed limits posted on curves reflect speeds that are considered safe for automobiles. Heavy vehicles with a high center of gravity can roll over at these speed limits. Use care and reduce your speed below the posted limit prior to entering a curve. Failure to comply may result in serious injury or death to personnel.

**ON-ROAD TRACTOR DRIVING PROCEDURES (FORWARD) - Continued****CAUTION**

Do not hold steering wheel at full left or full right for longer than 10 seconds. Oil overheating and pump damage can result.

14. Accelerate, brake, and steer as required.

**NOTE**

**Engine oil pressure has three monitoring systems (low oil pressure indicator, STOP ENGINE indicator, and engine oil pressure gauge)**

- If two of three monitoring systems indicate a problem, park HET Tractor, shut OFF engine (WP 0050) and notify field level maintenance.
  - If only one monitoring system indicates a problem and other two indicate normal, proceed with mission and then notify field level maintenance.
15. Check engine oil pressure by monitoring low oil pressure indicator (14), STOP ENGINE indicator (15), and engine oil pressure gauge (16).

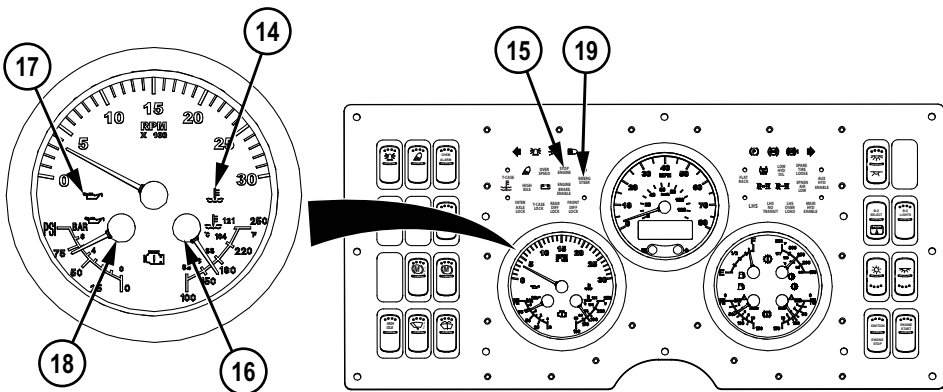


Figure 3. On-Road Tractor Driving Procedures (Forward).

**NOTE**

**Engine coolant temperature has three monitoring systems (High coolant temperature indicator, STOP ENGINE indicator, and coolant temperature gauge)**

- If two of three monitoring systems indicate a problem, park HET Tractor and idle engine at 800 to 1,000 rpm until coolant temperature

**ON-ROAD TRACTOR DRIVING PROCEDURES (FORWARD) - Continued**

cools to normal range. If coolant temperature does not cool, notify field level maintenance.

- If only one monitoring system indicates a problem and other two indicate normal, proceed with mission. Notify field level maintenance at completion of mission.
16. Check engine coolant temperature by monitoring high coolant temperature indicator (17), and coolant temperature gauge (18).

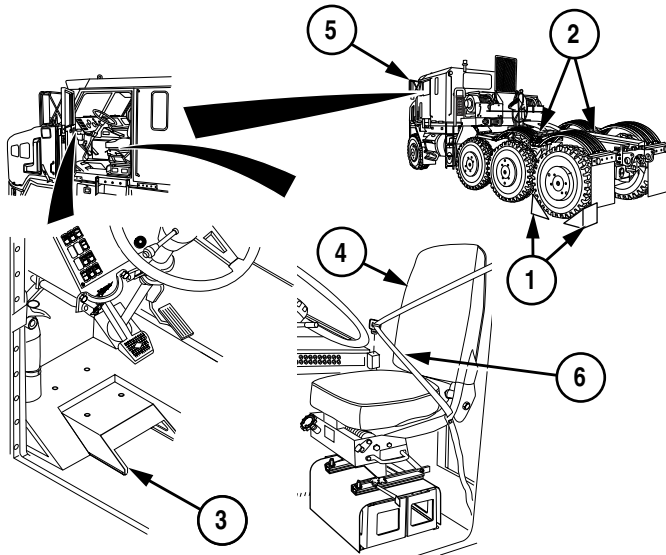
**CAUTION**

If transmission range selector (WP 0064) flashes current range selection while operating HET Tractor (shift selection is inhibited), DO NOT SHUT DOWN ENGINE OR FURTHER ATTEMPT TO CHANGE TRANSMISSION RANGE SELECTION. Shutting down engine may result in inability to select a drive range at engine startup (HET Tractor will be unable to move), and diagnostic data will be lost. Move HET Tractor to safe place for maintenance or perform limp home/transmission fault emergency procedures (WP 0083).

17. If STOP ENGINE indicator (15) illuminates (red) other than at startup, there is a problem in the engine that could cause damage to the engine. Check for low oil pressure or high coolant temperature. If indicators are normal, continue the mission. Notify field level maintenance at completion of mission.
18. If EMERGENCY STEER indicator (19) illuminates (red), there is a problem in the primary hydraulic steering system and the emergency steering (auxiliary) steering system has been activated. As HET Tractor speed gets below 15 mph (24 km/hr), increased effort will be required to steer HET Tractor, notify field level maintenance.

**END OF TASK****ON-ROAD TRACTOR DRIVING PROCEDURES (REVERSE)**

1. Remove wheel chocks (1) and stow in stowage boxes (2).

**ON-ROAD TRACTOR DRIVING PROCEDURES (REVERSE) - Continued**

*Figure 4. On-Road Tractor Driving Procedures (Reverse).*

2. Extend or stow foot rest (WP 0029) (3), as required.
3. Adjust driver's seat (WP 0030) (4), as required.

**CAUTION**

Mirror should be folded in before backing HET Tractor out of an enclosed area. Failure to comply may result in damage to equipment.

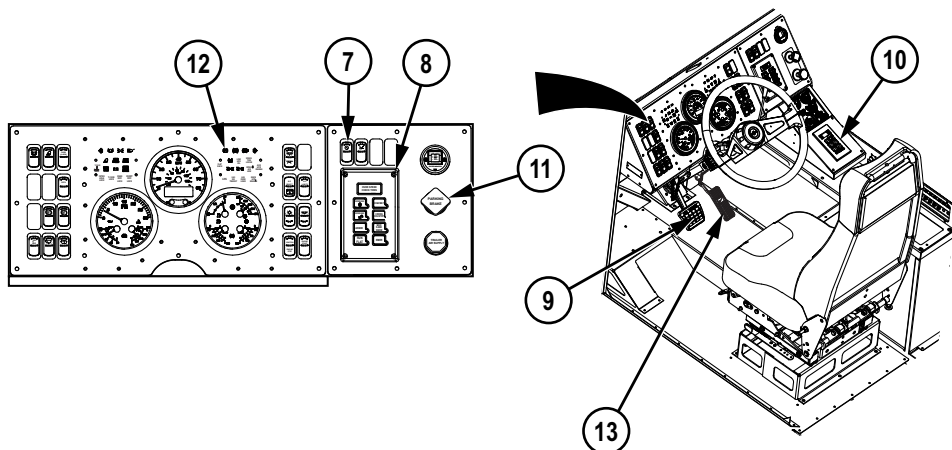
4. Adjust each rear view mirror (5) so back of HET Tractor and view of road can be seen.
5. Adjust driver's seat belt (WP 0031) (6), as required.

**CAUTION**

CTIS on/off switch should be in on position (down) at all times. Overspeed protection will not operate if switch is in off position (up) and tire pressures may not match driving speeds, resulting in unsafe driving conditions or tire damage.

6. Push CTIS on/off switch (7) down to on position.



**ON-ROAD TRACTOR DRIVING PROCEDURES (REVERSE) - Continued**

*Figure 5. On-Road Tractor Driving Procedures (Reverse).*

7. Start engine (WP 0045).

**NOTE**

- Allow time for CTIS adjustment. When changing terrain/load settings, indicator lights within the button(s) chosen will flash (green) to indicate CTIS is checking and adjusting tire pressures and driveline lockups. Indicator lights will illuminate continuous (green) when tire pressures and driveline lockups are properly set.
  - If it becomes necessary to disable CTIS, tires will have to be manually inflated or deflated.
8. Set CTIS controller (WP 0052) (8) to appropriate load and terrain settings.
  9. Turn on lights (WP 0043) (as required).

**WARNING**

Do not back up Heavy Equipment Transporter (HET) Tractor without a ground guide. The location of the ground guide must be known at all times. Failure to comply may result in serious injury or death to personnel.

10. Apply service brake pedal (WP 0047) (9).
11. Set transmission range selector (WP 0064) (10) to R (reverse).
12. Push in PARKING BRAKE control (WP 0049) (11) to release parking brakes. Parking brake indicator (12) will go out.

**ON-ROAD TRACTOR DRIVING PROCEDURES (REVERSE) - Continued**

13. Release service brake pedal (WP 0047) (9) and slowly apply throttle pedal (13) until HET Tractor reaches desired speed.
14. Follow direction from ground guide.

**CAUTION**

Do not hold steering wheel at full left or full right for longer than 10 seconds. Oil overheating and pump damage can result.

15. Accelerate, brake, and steer as required.

**END OF TASK****MOVING TRAILER (FORWARD)****WARNING**

Ensure the position of assistant is known at all times. Failure to comply may result in serious injury or death to personnel.

**WARNING**

All safety requirements such as hazard flags, road permits, flashing warning lights, escort vehicles, and wide load signs must be met. Failure to comply may result in serious injury or death to personnel or damage to equipment.

1. When towing a trailer, overall length of HET Tractor/trailer must be kept in mind when passing other vehicles. During trailering operations, acceleration rate is reduced and stopping distance is increased.

**WARNING**

The HET tractor-trailer combination does not track in the same way as standard or conventional tractor-trailer combinations. Operators must know and understand this prior to operating HET tractor-trailer on public access roads. Wide, conventional tractor-trailer turns may result in damage to equipment and serious injury or death to personnel.

**WARNING**

When making sharp turns, the trailer may swing beyond normal turning radius. Failure to observe this warning may result in personnel injury or damage to equipment.

**MOVING TRAILER (FORWARD) - Continued****WARNING**

Speed limits posted on curves reflect speeds that are considered safe for automobiles. Heavy vehicles with a high center of gravity can roll over at these speed limits. Use care and reduce your speed below the posted limit prior to entering a curve. Failure to comply may result in serious injury or death to personnel.

2. When turning corners, trailer wheels turn inside the turning radius of towing HET Tractor. To make right or left turn at intersection, drive HET Tractor about halfway into intersection and then cut sharply to right or left. This will prevent trailer from running over curb or from going into lane of oncoming traffic.

**END OF TASK****BACKING TRAILER****WARNING**

Use caution when trailer is backing up. Wheels on trailer will not be straight when Heavy Equipment Transporter (HET) Tractor/trailer is stopped and then driven forward. Rear of trailer will swing wide right or left. Failure to comply may result in serious injury or death to personnel.

**WARNING**

Ensure the position of assistant is known at all times. Failure to comply may result in serious injury or death to personnel.

**NOTE**

An assistant (ground guide) is required to give signals during backing operations.

When backing, rear of trailer will always move in direction opposite of front wheels on HET Tractor. Trailer will turn quickly. When HET Tractor front wheels are turned right, rear of trailer will go left. When trailer has turned, and backing in a straight line is required, turn HET Tractor wheels in direction trailer is moving. This will bring HET Tractor and trailer in a straight line. Observe the following precautions when backing trailer:

- a. Adjust side mirrors for best visibility.
- b. Use a ground guide when backing HET Tractor/trailer. Ground guide must be visible to operator at all times to provide backing instructions.

**BACKING TRAILER - Continued**

- c. Back up slowly. Pay close attention to signals and location of ground guide.

**END OF TASK****BRAKING, STOPPING, AND PARKING TRAILER****NOTE**

TRAILER AIR SUPPLY control must be pushed in for trailer brakes to operate.

1. During normal operation, service brakes of HET Tractor and a properly coupled trailer are both applied when service brake pedal (WP 0047) (1) is pushed. Service brake pedal (WP 0047) (1) pressure must be applied gradually and smoothly, keeping in mind that stopping distance will increase when trailer is being towed.

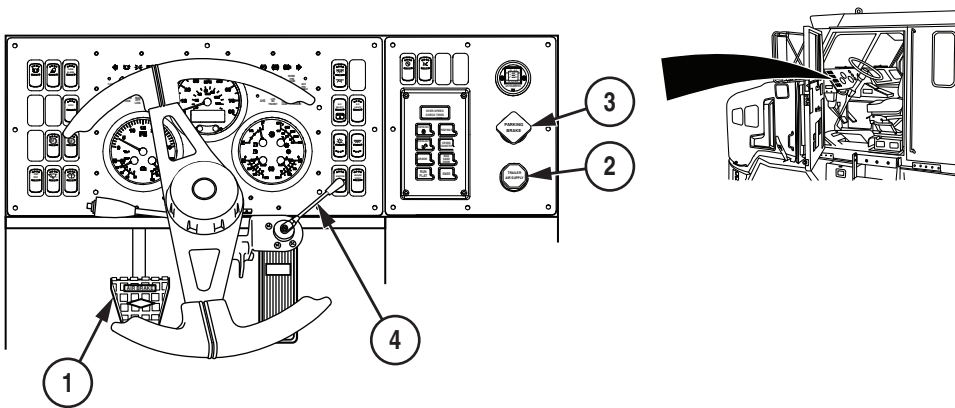


Figure 6. Braking, Stopping, And Parking Trailer.

**NOTE**

TRAILER AIR SUPPLY control must be pushed in for trailer parking brakes to operate.

2. PARKING BRAKE control (WP 0049) (3) will apply parking brakes to both the tractor and a properly coupled trailer (if so equipped).

**NOTE**

- Trailer handbrake control lever (WP 0048) is not used during normal operation.

**BRAKING, STOPPING, AND PARKING TRAILER - Continued**

- Trailer handbrake control lever (WP 0048) can be used for connect and disconnect operations of trailers without spring brakes.
3. Trailer handbrake control lever (WP 0048) (4) applies trailer brakes ONLY. Do not apply trailer handbrake control lever (WP 0048) (4) when parking.

**END OF TASK****END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
EXTEND/STOW FOOTREST**

---

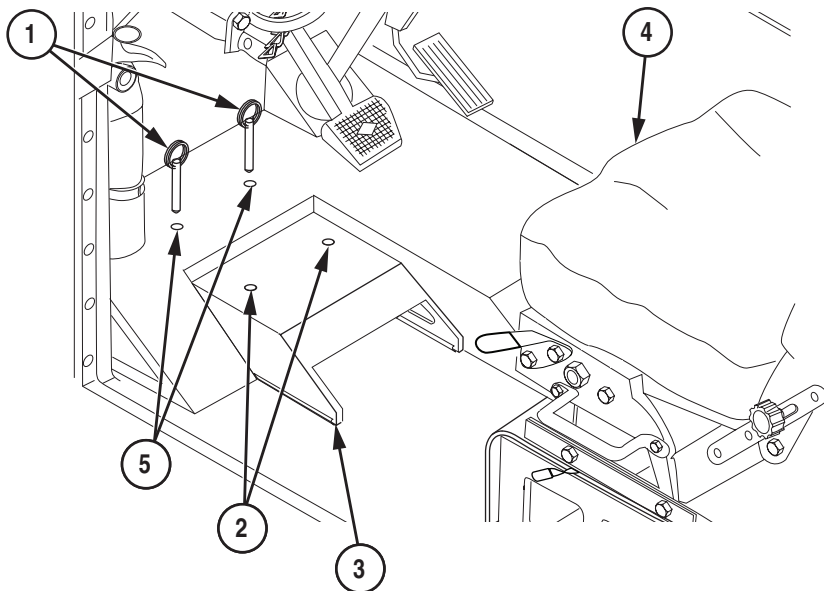
**INITIAL SETUP:**

Not Applicable

---

**EXTEND FOOTREST**

1. Remove two lockpins (1) from holes (2).



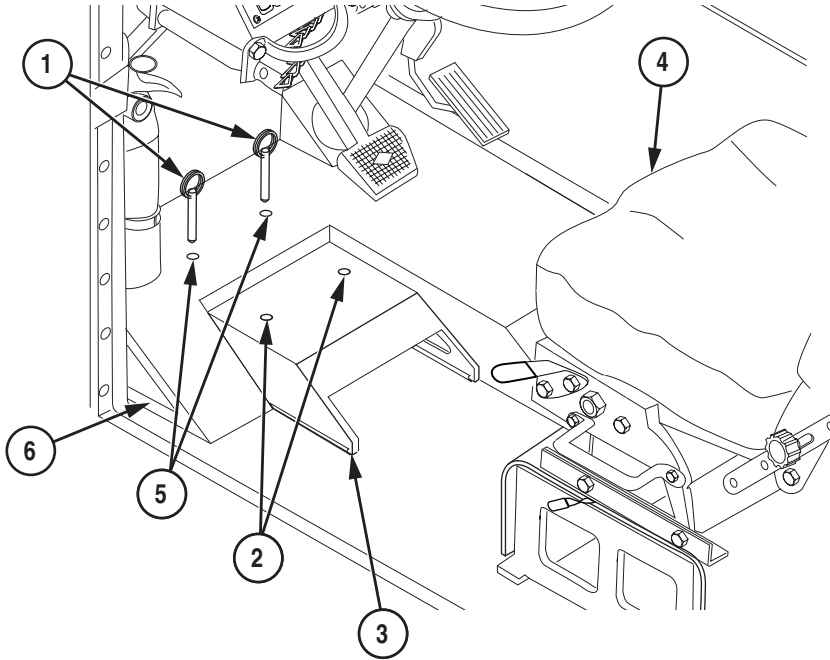
*Figure 1. Extend Footrest.*

2. Pull footrest (3) toward seat (4) until holes in footrest align with hole (5).
3. Install two lockpins (1) in holes (5).

**END OF TASK**

**STOW FOOTREST**

1. Remove two lockpins (1) from holes (5).



*Figure 2. Stow Footrest.*

2. Push footrest (3) away from seat (4) under floorbox (6) until holes (2) are aligned with holes (5).
3. Install two lockpins (1) in holes (5 and 2).

**END OF TASK**

**END OF WORK PACKAGE**



---

## OPERATOR MAINTENANCE ADJUST DRIVER'S SEAT

---

### INITIAL SETUP:

Not Applicable

---

### ADJUST CUSHION FIRMNESS

#### NOTE

Sit in seat to make the following adjustments.

1. Turn ride adjustment control (1) clockwise to increase cushion firmness.

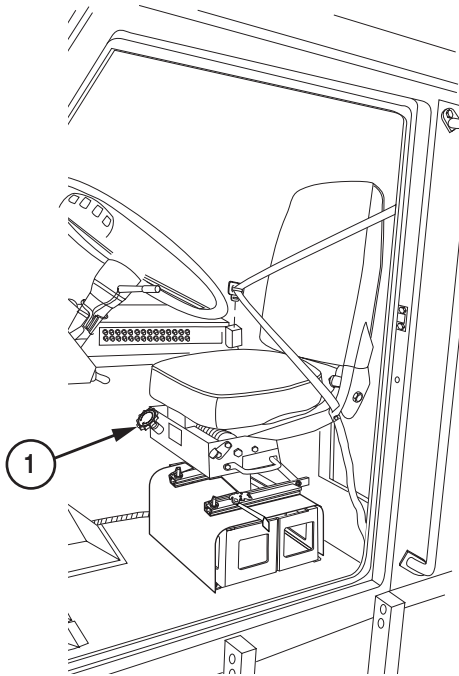


Figure 1. *Adjust Cushion Firmness.*

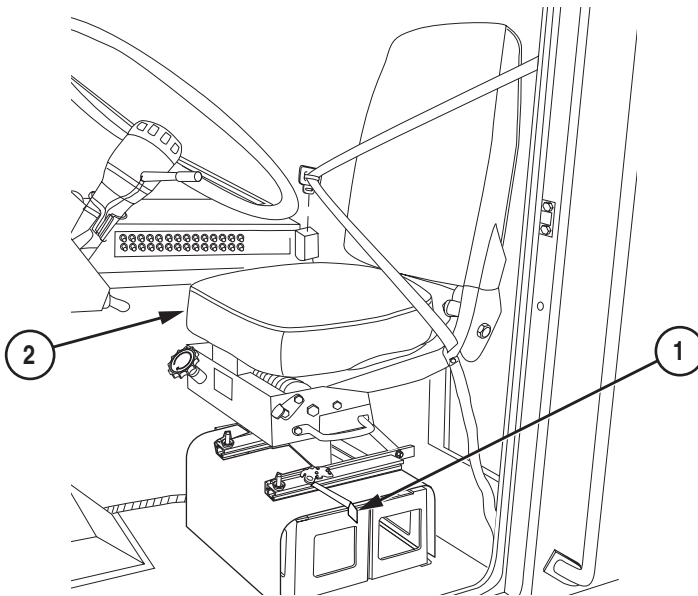
**ADJUST CUSHION FIRMNESS - Continued**

2. Turn ride adjustment control (1) counterclockwise to decrease cushion firmness.

**END OF TASK****ADJUST SEAT POSITION****NOTE**

Sit in seat to make the following adjustments.

1. Push forward/backward adjustment control (1) to left and slide seat (2) forward or backward.



*Figure 2. Adjust Seat Position.*

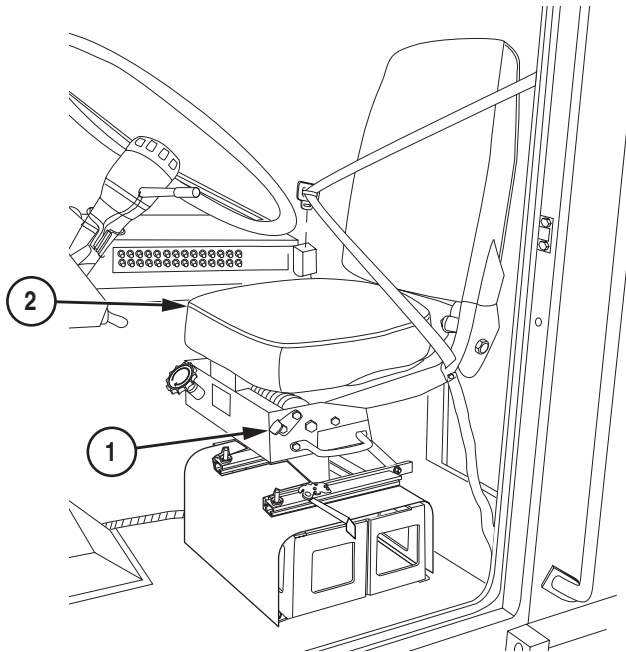
2. Release forward/backward adjustment control (1) to lock seat (2) in place.

**END OF TASK****ADJUST SEAT HEIGHT****NOTE**

Sit in seat to make the following adjustments.

**ADJUST SEAT HEIGHT - Continued**

1. Pull height adjustment control (1) up and take weight off seat (2) to raise, push down on seat (2) to lower.



*Figure 3. Adjust Seat Height.*

2. Release height adjustment control (1) to lock seat (2) at desired height.

**END OF TASK**

**END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE OPERATE DRIVER'S SEAT BELT

---

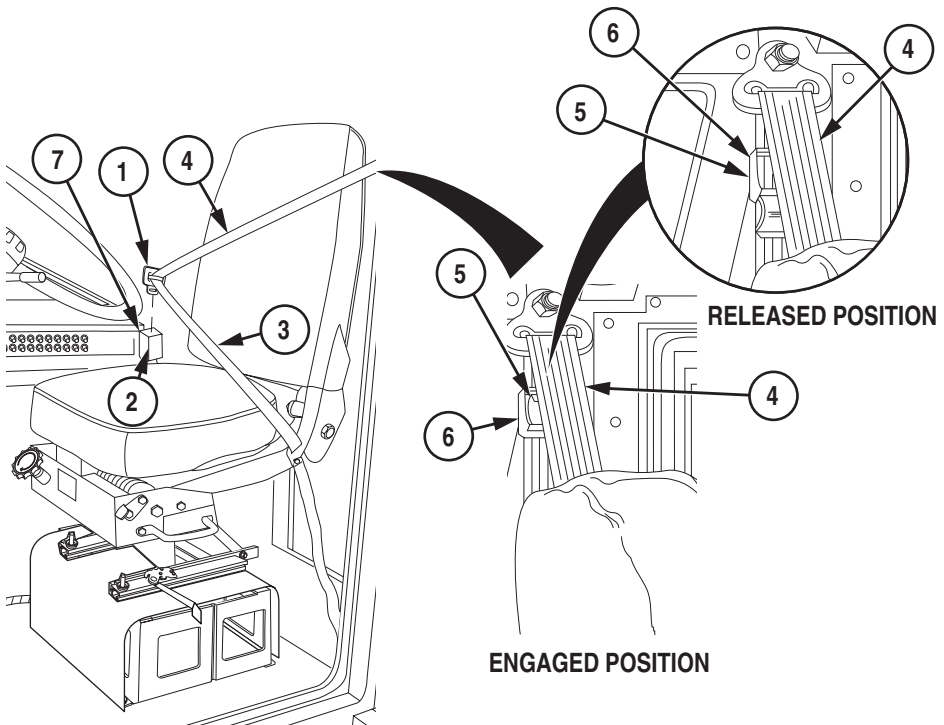
### INITIAL SETUP:

Not Applicable

---

### FASTEN DRIVER'S SEAT BELT

1. Insert seat belt flat metal end (1) in buckle (2) until click is heard.



*Figure 1. Driver's Seat Belt Operation.*

2. Place lap belt (3) as low on hips as possible.

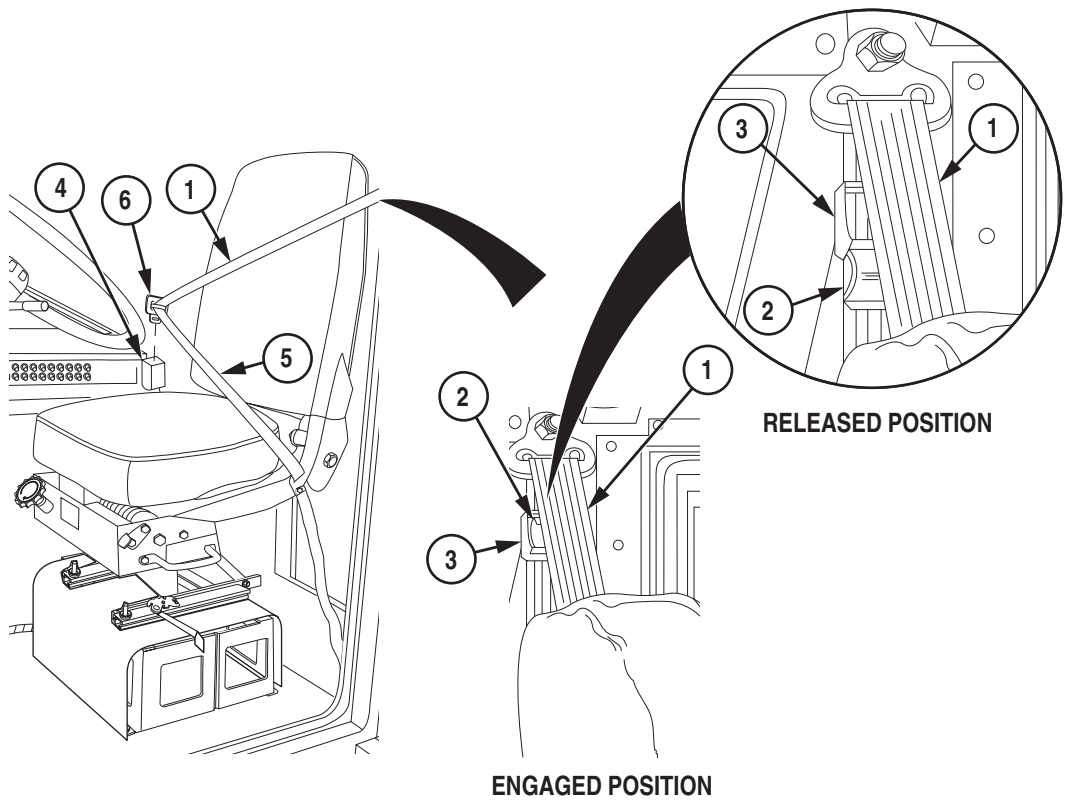
**FASTEN DRIVER'S SEAT BELT - Continued****NOTE**

Seat belt does not have self-adjusting lock. Pull shoulder belt to take out slack from lap belt.

3. Pull shoulder belt (4) until lap belt (3) fits snug.
4. Adjust shoulder belt (4) with no more than 1 in. (2.5 cm) slack between chest and shoulder belt (4).
5. Lift up release lever (5) of comfort latch (6) to clamp shoulder belt (4) in place.

**END OF TASK****RELEASE DRIVER'S SEAT BELT**

1. Pull down on shoulder belt (1) to release lever (2) of comfort latch (3).

**RELEASE DRIVER'S SEAT BELT - Continued**

*Figure 2. Driver's Seat Belt Operation.*

2. Push down on red button (4) to release lap belt (5). Pull out seat belt flat metal end (6).

**END OF TASK**

**END OF WORK PACKAGE**





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**OPERATOR MAINTENANCE  
ADJUST PASSENGER SEAT**

---

**INITIAL SETUP:**

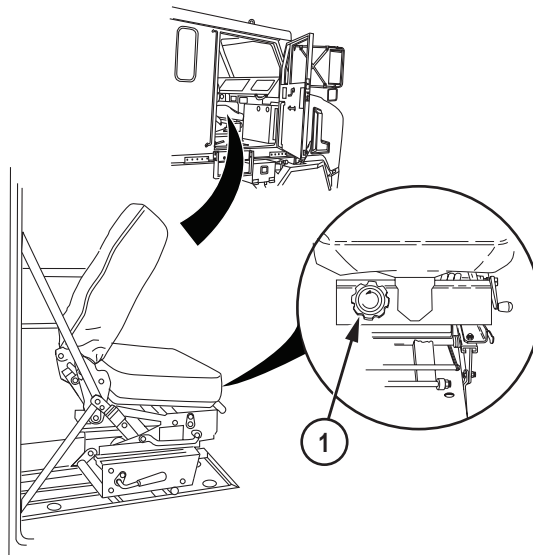
Not Applicable

---

**ADJUST CUSHION FIRMNESS****NOTE**

Sit in seat to make adjustments.

1. Turn ride adjustment control (1) clockwise to increase cushion firmness.



*Figure 1. Adjust Cushion Firmness.*

2. Turn ride adjustment control (1) counterclockwise to decrease cushion firmness.

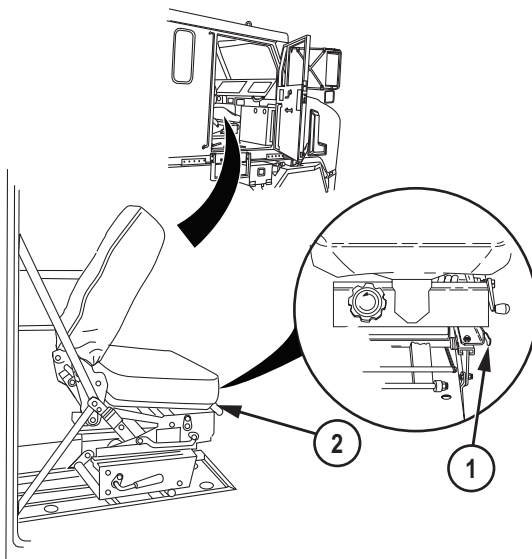
**END OF TASK**

## ADJUST SEAT POSITION

### NOTE

Sit in seat to make adjustments.

1. Push forward/backward adjustment control (1) to left and slide seat (2) forward or backward.



*Figure 2. Adjust Seat Position.*

2. Release forward/backward adjustment control (1) to lock seat (2) in place.

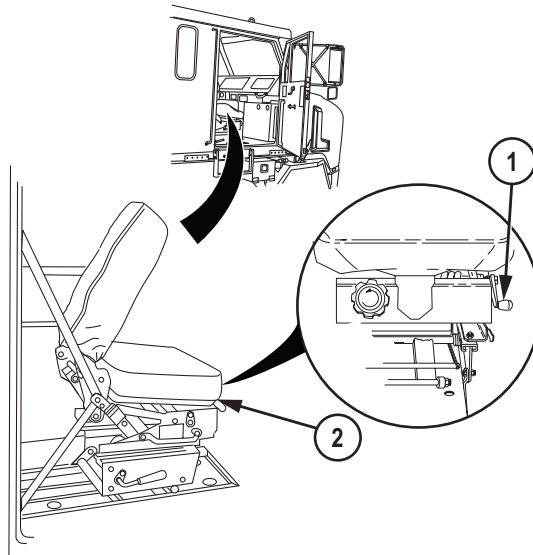
## END OF TASK

## ADJUST SEAT HEIGHT

### NOTE

Sit in seat to make adjustments.

1. Pull height adjustment control (1) up and take weight off seat (2) to raise, push down on seat (2) to lower.

**ADJUST SEAT HEIGHT - Continued**

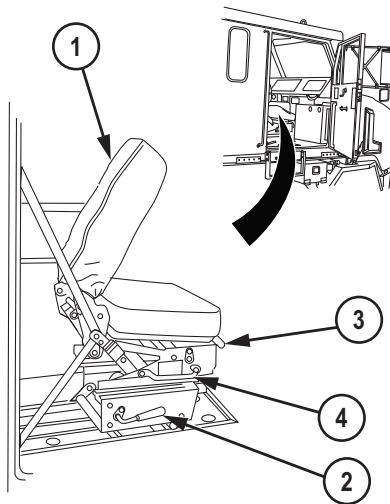
*Figure 3. Adjust Seat Height.*

2. Release height adjustment control (1) to lock seat (2) at desired height.

**END OF TASK****ALLOW ACCESS TO/FROM REAR SEAT****WARNING**

Seat belts must be disconnected when pivoting passenger seat forward for rear passenger seat access. Failure to comply may result in serious injury or death to personnel.

1. Lift backrest (1) up and push forward.

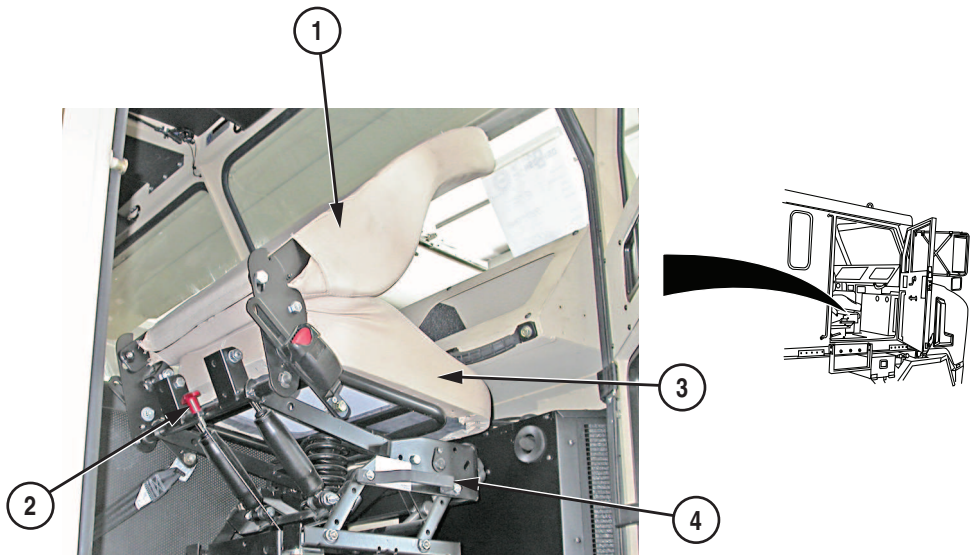
**ALLOW ACCESS TO/FROM REAR SEAT - Continued**

*Figure 4. Rear Seat Access.*

2. Pull seat lift control (2) up, lift seat (3) using grab handle (4), and push seat (3) forward.
3. Release seat lift control (2).
4. Return seat (3) to operating position by using grab handle (4) to push seat (3) rearward and down until it clicks.
5. Lift and push backrest (1) rearward until it drops into operating position.

**END OF TASK****ALLOW ACCESS FROM REAR SEAT**

1. Lift backrest (1) up and push forward.

**ALLOW ACCESS FROM REAR SEAT - Continued**

*Figure 5. Access From Rear Seat.*

2. Pull up on rear lift control handle (2), lift seat (3), and push seat (3) forward.
3. Release rear lift control handle (2).
4. After exiting, return seat (3) to operating position by using grab handle (4) to push seat (3) rearward and down until it clicks.
5. Push backrest (1) rearward until it drops into operating position.

**END OF TASK**

**END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE OPERATE PASSENGER'S SEAT BELT

---

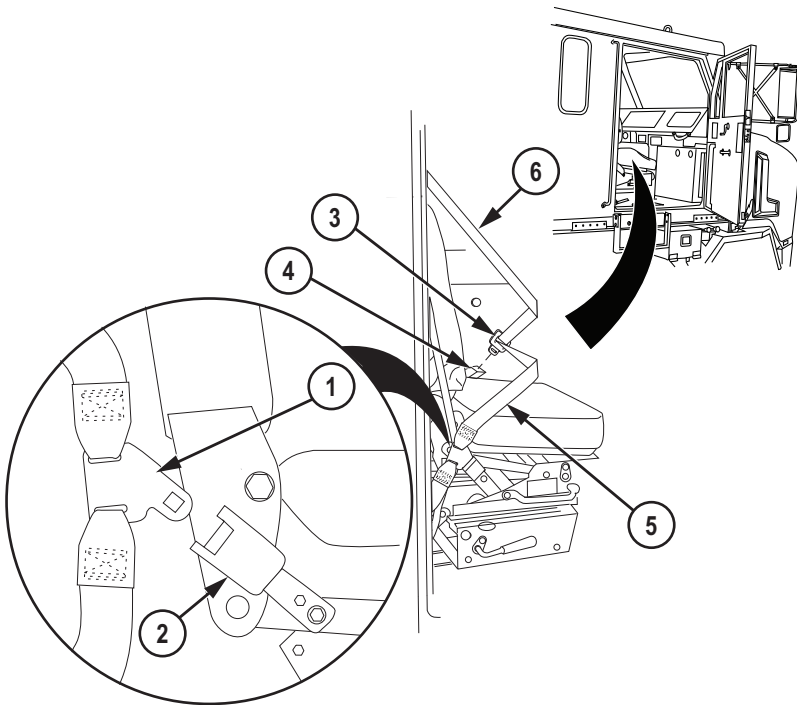
### INITIAL SETUP:

Not Applicable

---

### FASTEN PASSENGER'S SEAT BELT

1. Insert seat belt flat metal end (1) in buckle (2) until click is heard.



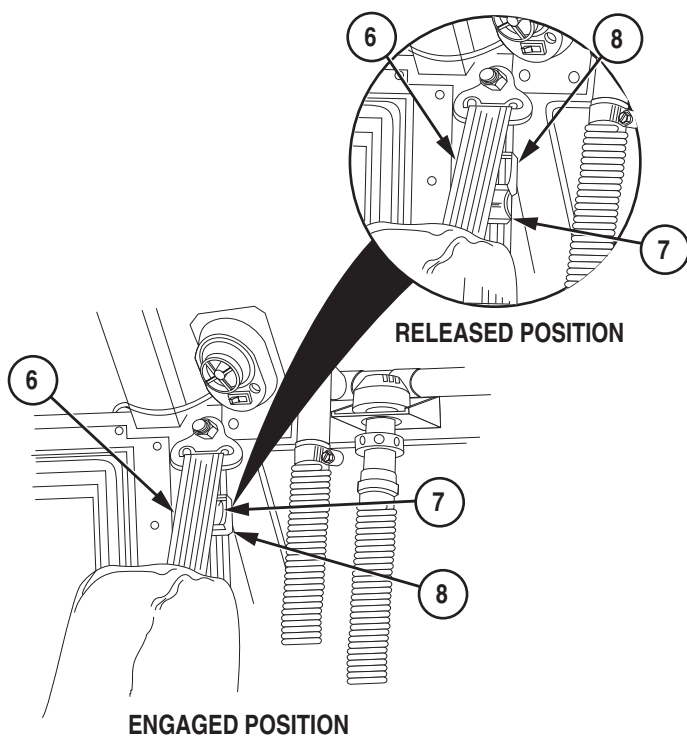
*Figure 1. Fasten Passenger's Seat Belt.*

2. Insert seat belt flat metal end (3) in buckle (4) until click is heard.
3. Place lap belt (5) as low on hips as possible.

**FASTEN PASSENGER'S SEAT BELT - Continued****NOTE**

Seat belt does not have self-adjusting lock. Pull shoulder belt to take out slack from lap belt.

4. Pull shoulder belt (6) until lap belt (5) is snug.
5. Adjust shoulder belt (6) with no more than 1 in. (2.5 cm) slack between chest and belt (6).



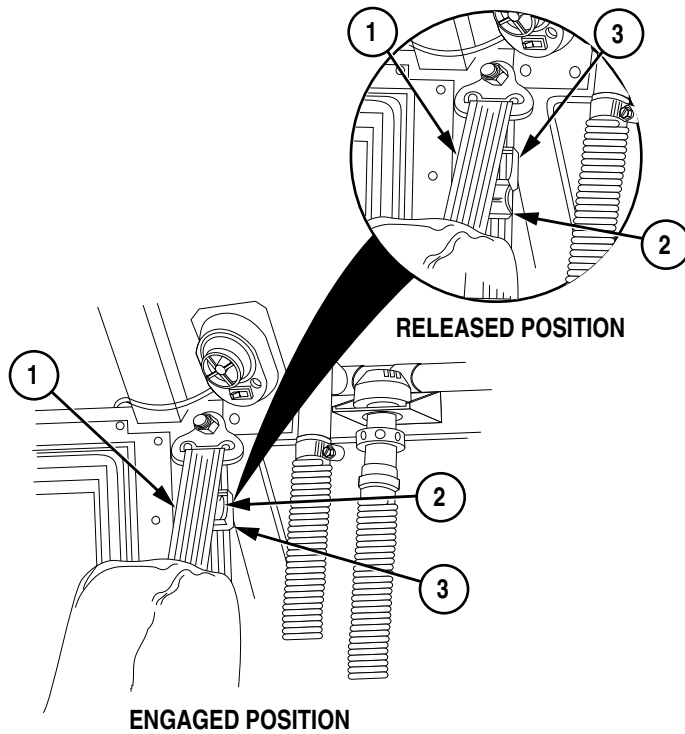
*Figure 2. Adjust Passenger's Seat Belt.*

6. Lift up lever (7) of comfort latch (8) to clamp shoulder belt (6) in place.

**END OF TASK****RELEASE PASSENGER'S SEAT BELT**

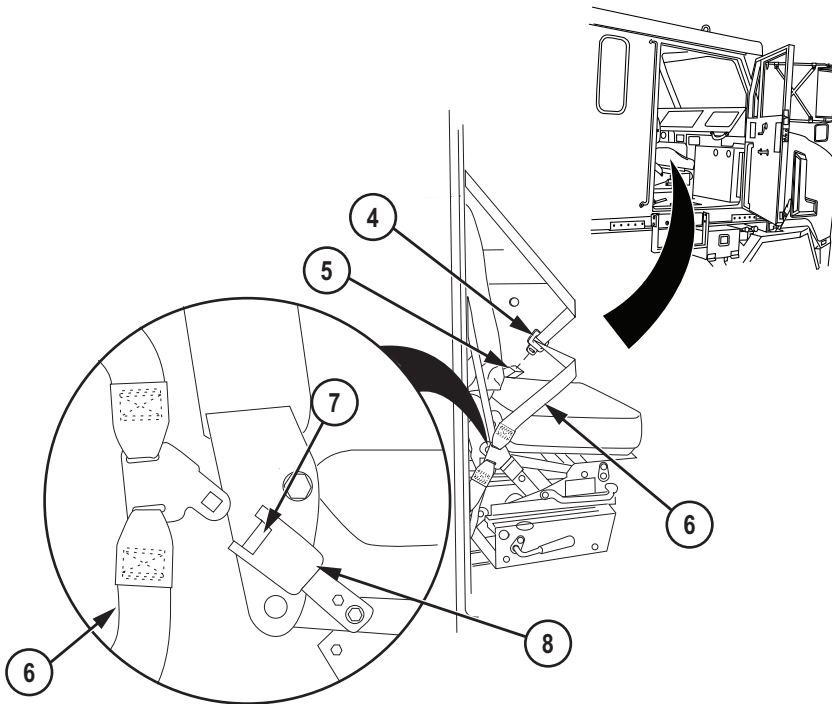
1. Pull down on shoulder belt (1) to release lever (2) of comfort latch (3).



**RELEASE PASSENGER'S SEAT BELT - Continued**

*Figure 3. Release Passenger's Seat Belt.*

2. Push down on red button (4) on buckle (5) to release seat belt (6).

**RELEASE PASSENGER'S SEAT BELT - Continued**

*Figure 4. Release Passenger's Seat Belt.*

3. Push down red button (7) on buckle (8) to release seat belt (6).

**END OF TASK**

**END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE REAR SEAT/BED CONVERSION

---

### INITIAL SETUP:

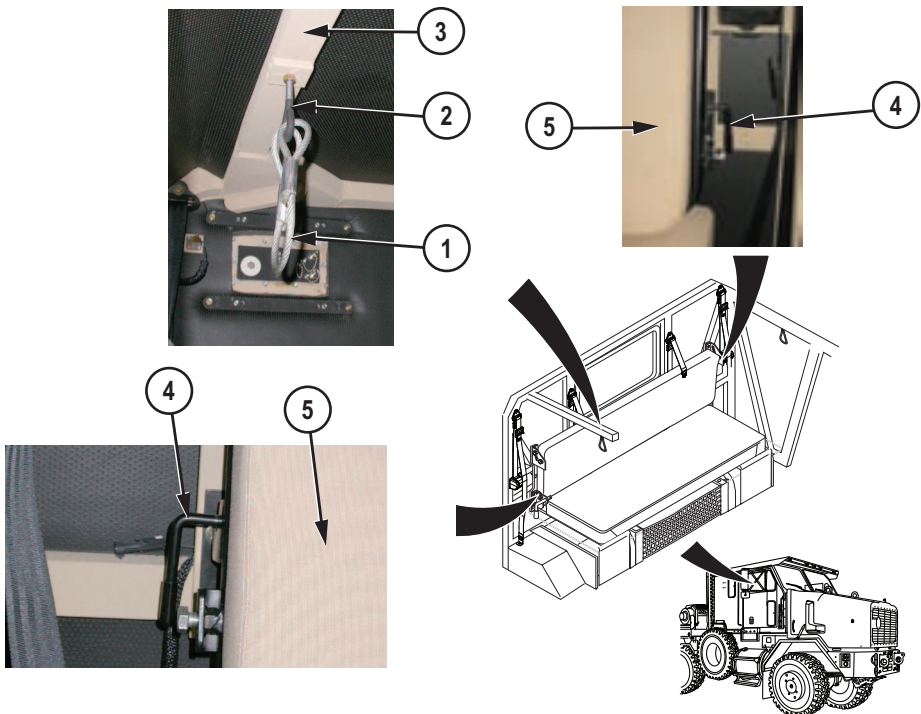
#### Personnel Required

Operator and Assistant - - (2)

---

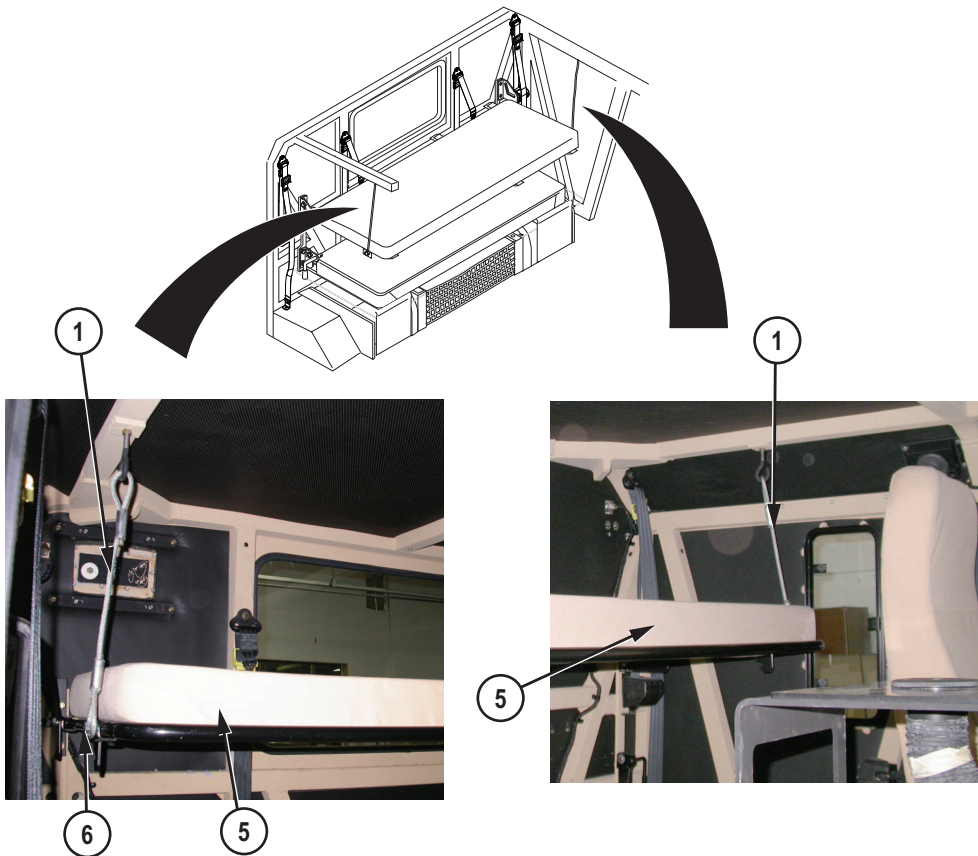
### CHANGE REAR SEAT TO BEDS

1. Remove one end of each of two support cables (1) from hooks (2) in cab frame (3).



*Figure 1. Change Rear Seat to Beds.*

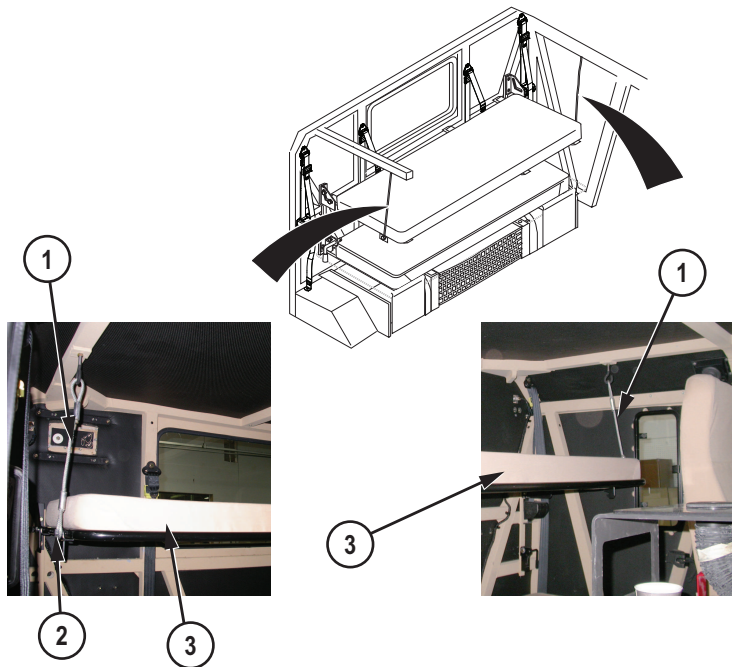
2. With the aid of an assistant, pull up on two release levers (4) and raise seat back (5) to horizontal position.
3. With the aid of an assistant, place loops of two support cables (1) around two screws (6) on ends of seat back (5).

**CHANGE REAR SEAT TO BEDS - Continued**

*Figure 2. Change Rear Seats to Beds.*

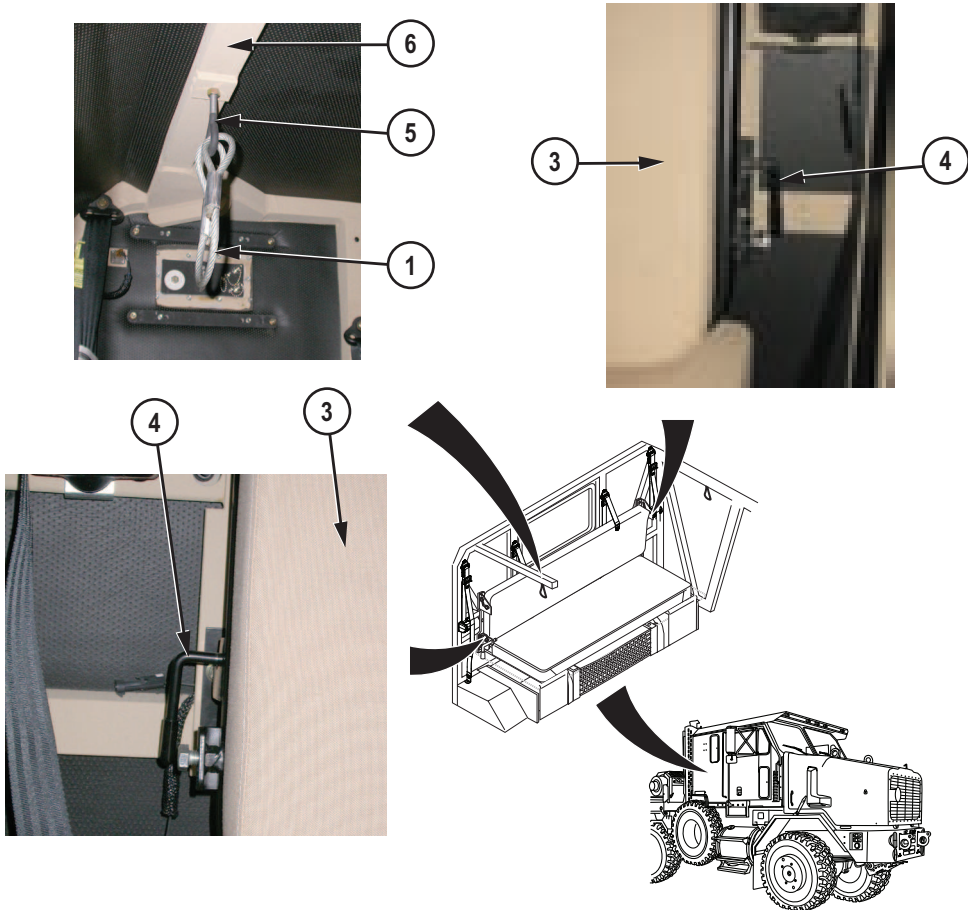
**END OF TASK****CHANGE BEDS TO REAR SEAT**

1. With the aid of an assistant, remove loops of two support cables (1) from two screws (2) on ends of seat back (3).

**CHANGE BEDS TO REAR SEAT - Continued**

*Figure 3. Change Beds to Rear Seat.*

2. With the aid of an assistant, lower seat back (3) to vertical position and push rearward to latch release levers (4).

**CHANGE BEDS TO REAR SEAT - Continued**

*Figure 4. Change Beds to Rear Seat.*

3. Stow one end of each of two support cables (1) on hooks (5) in cab frame (6).

**END OF TASK**

**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE  
OPERATE REAR SEAT BELTS**

---

**INITIAL SETUP:**

Not Applicable

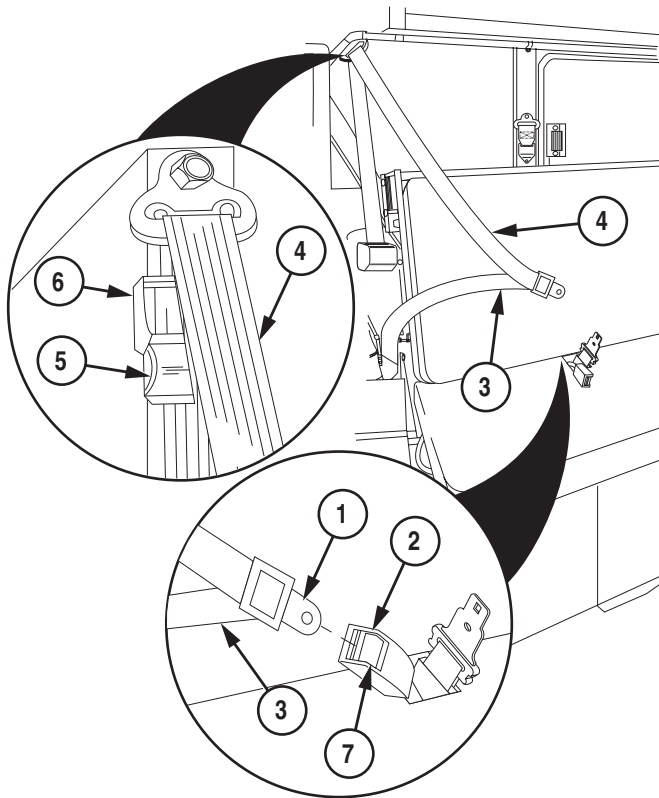
---

**FASTEN OUTER REAR SEAT BELTS**

**NOTE**

Passenger side and driver side outer seat belts are operated the same way. Passenger side shown.

1. Insert seat belt flat metal end (1) in buckle (2) until click is heard.

**FASTEN OUTER REAR SEAT BELTS - Continued**

*Figure 1. Fasten Outer Rear Seat Belts.*

2. Place lap belt (3) as low on hips as possible.

**NOTE**

Seat belt does not have self-adjusting lock. Pull shoulder belt to take out slack from seat belt.

3. Pull shoulder belt (4) until lap belt (3) is snug.
4. Adjust shoulder belt (4) with no more than 1 in. (2.5 cm) slack between chest and belt (4).
5. Lift up lever (5) of comfort latch (6) to clamp shoulder belt (4) in place.

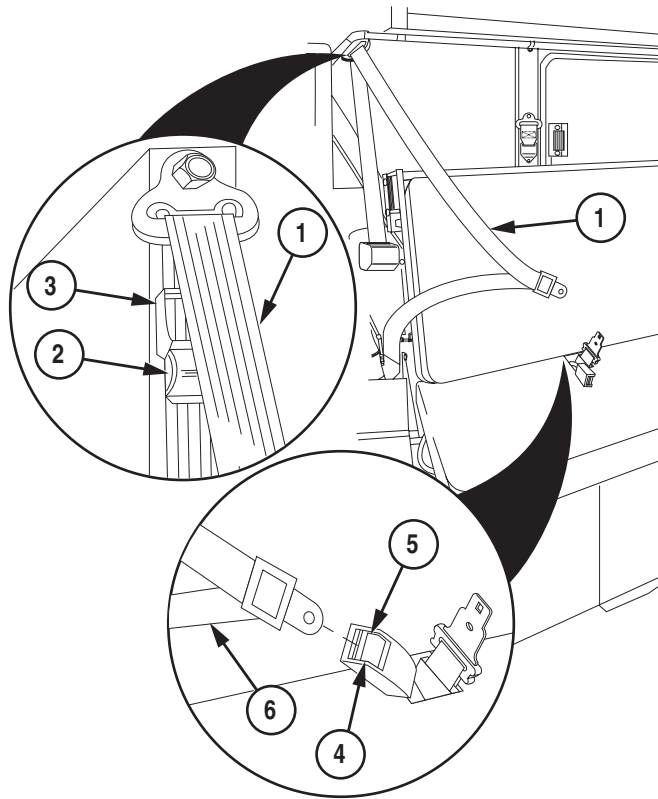
**END OF TASK**



**RELEASE OUTER REAR SEAT BELTS****NOTE**

Passenger side and driver side outer seat belts are operated the same way. Passenger side shown.

1. Pull down on shoulder belt (1) to release lever (2) of comfort latch (3).



*Figure 2. Release Outer Rear Seat Belts.*

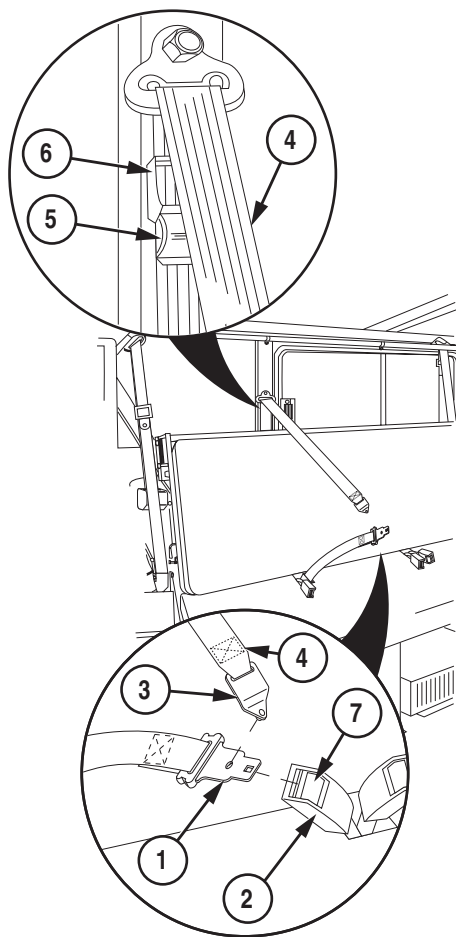
2. Push down on red button (4) on buckle (5) to release seat belt flat metal end (6).

**END OF TASK**

**FASTEN INNER REAR SEAT BELTS****NOTE**

Passenger side and driver side inner seat belts are operated the same way. Passenger side shown.

1. Insert lap belt flat metal end (1) in buckle (2) until click is heard.



*Figure 3. Fasten Inner Rear Seat Belts.*

2. Insert shoulder belt metal end (3) in lap belt flat metal end (1).

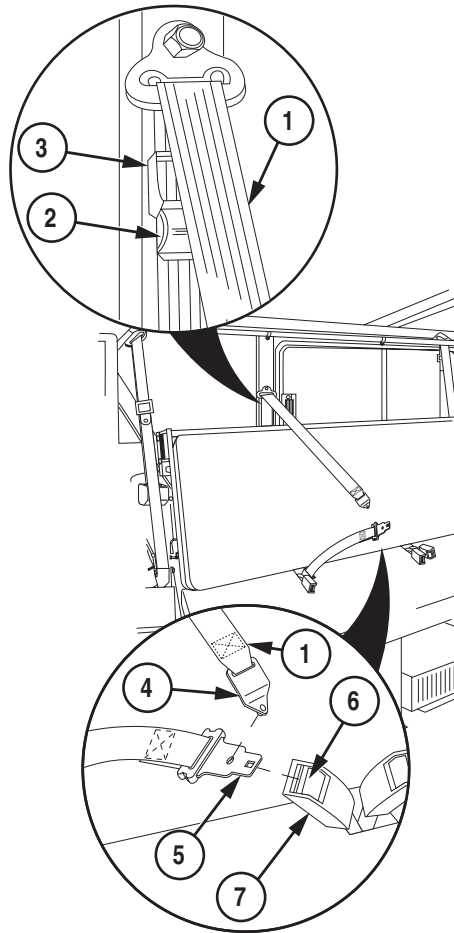
**FASTEN INNER REAR SEAT BELTS - Continued****NOTE**

Seat belt does not have self-adjusting lock. Pull shoulder belt to take out slack from seat belt.

3. Adjust shoulder belt (4) with no more than 1 in. (2.5 cm) slack between chest and belt (4).
4. Lift up lever (5) of comfort latch (6) to clamp shoulder belt (4) in place.

**END OF TASK****RELEASE INNER REAR SEAT BELTS**

1. Pull down on shoulder belt (1) to release lever (2) of comfort latch (3).

**RELEASE INNER REAR SEAT BELTS - Continued**

*Figure 4. Release Inner Rear Seat Belts.*

2. Remove shoulder belt metal end (4) from lap belt flat metal end (5).
3. Push down on red button (6) on buckle (7) to release lap belt flat metal end (5).

**END OF TASK**

**END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE INSTALL/REMOVE WHEEL CHOCKS

---

### INITIAL SETUP:

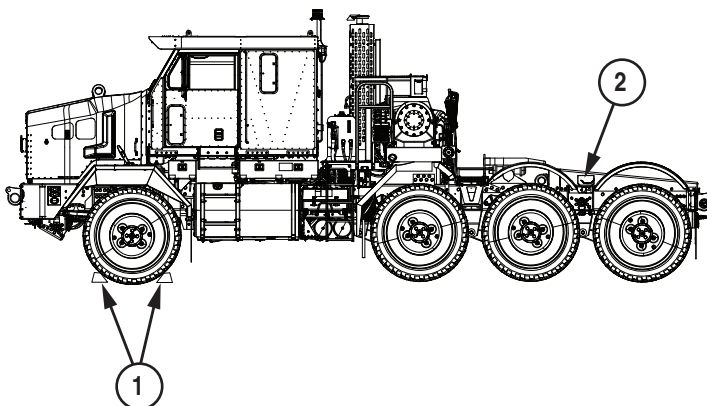
Not Applicable

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### INSTALL WHEEL CHOCKS

#### NOTE

- Heavy Equipment Transporter (HET) Tractor is equipped with four wheel chocks.
  - Always chock tires if HET Tractor is shutdown on uneven terrain.
  - Always chock tires if HET Tractor parking brake is inoperative.
  - Ensure local policy for chocking vehicle tires is followed.
1. Remove two wheel chocks (1) from wheel chock stowage box (2).



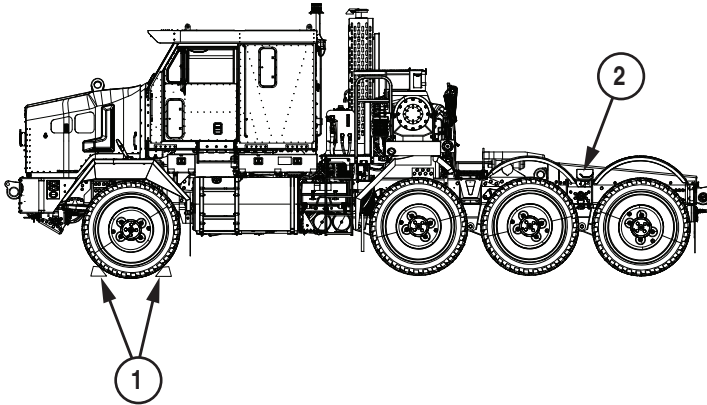
*Figure 1. Install Wheel Chocks.*

2. Place wheel chocks (1) snugly against front and rear of tire (No. 1 axle driver side tire shown).

**REMOVE WHEEL CHOCKS****NOTE**

- HET Tractor is equipped with four wheel chocks.
- Ensure local policy for removing wheel chocks is followed.

1. Remove wheel chocks (1) from front and rear of tire (No. 1 axle driver side tire shown).



*Figure 2. Remove Wheel Chocks.*

2. Return wheel chocks (1) to wheel chock stowage box (2).
3. Repeat Steps (1) and (2) if more than one wheel is chocked.

**END OF TASK**

**END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE UNSTOW/STOW CATWALK LADDER

---

### INITIAL SETUP:

Not Applicable

---

### UNSTOW CATWALK LADDER

1. Remove pin (1) from hole (2).

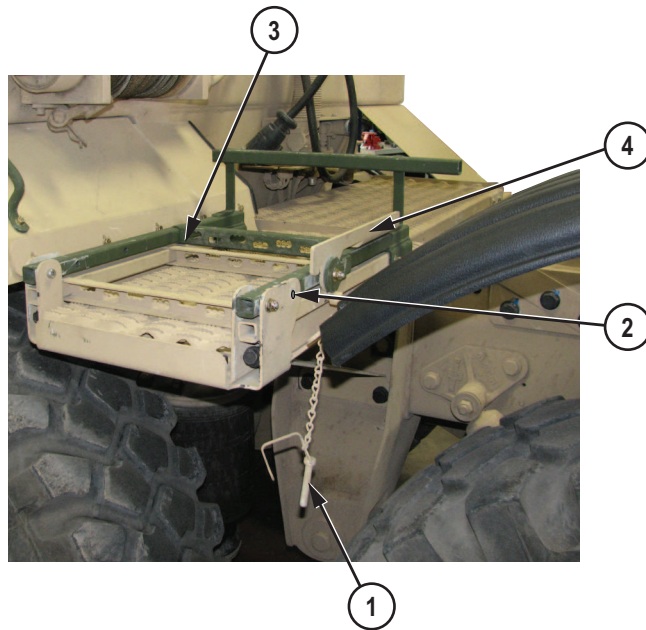


Figure 1. Unstow Catwalk Ladder.

**UNSTOW CATWALK LADDER - Continued****WARNING**

Use caution when unstowing catwalk ladder. Always stand to rear of catwalk ladder while it is being lowered. Failure to comply may result in serious injury or death to personnel.

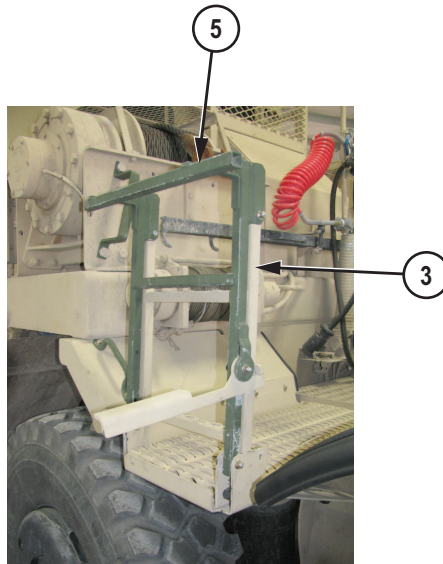
2. Standing to rear of catwalk ladder (3), pull catwalk ladder handle (4) with right hand. Continue to pull catwalk ladder handle (4) to lift catwalk ladder (3).

**WARNING**

Use caution when unstowing/stowing catwalk ladder. Fingers can get pinched between lower catwalk ladder section and upper catwalk ladder section. Failure to comply may result in serious injury or death to personnel.

3. As catwalk ladder (3) passes vertical, grasp support (5) with left hand.



**UNSTOW CATWALK LADDER - Continued**

*Figure 2. Unstow Catwalk Ladder.*

4. Allow catwalk ladder (3) to extend to unstowed position.

**UNSTOW CATWALK LADDER - Continued**

*Figure 3. Unstow Catwalk Ladder.*

**END OF TASK****STOW CATWALK LADDER****WARNING**

Use caution when stowing catwalk ladder. Always stand to rear of catwalk ladder while it is being raised. Failure to comply may result in serious injury or death to personnel.

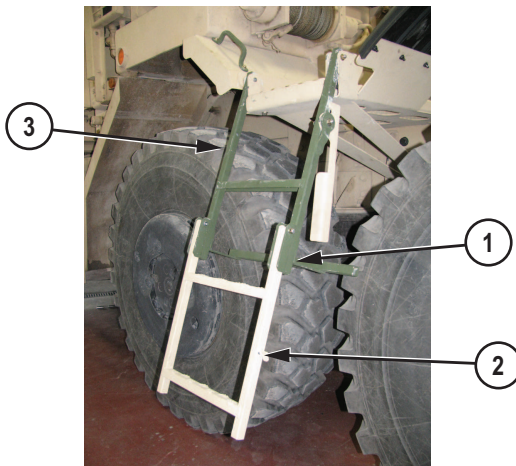
**WARNING**

Use caution when unstowing/stowing catwalk ladder. Fingers can get pinched between lower catwalk ladder section and upper catwalk ladder

**STOW CATWALK LADDER - Continued**

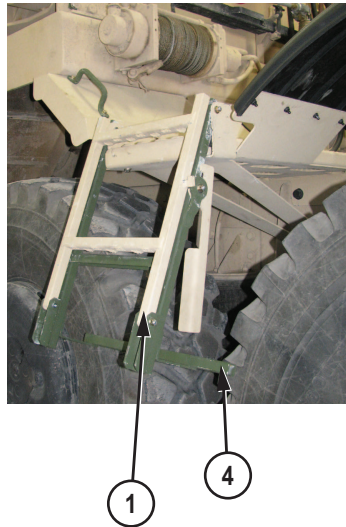
section. Failure to comply may result in serious injury or death to personnel.

1. Standing to rear of extended catwalk ladder (1), fold lower catwalk ladder section (2) into upper catwalk ladder section (3).



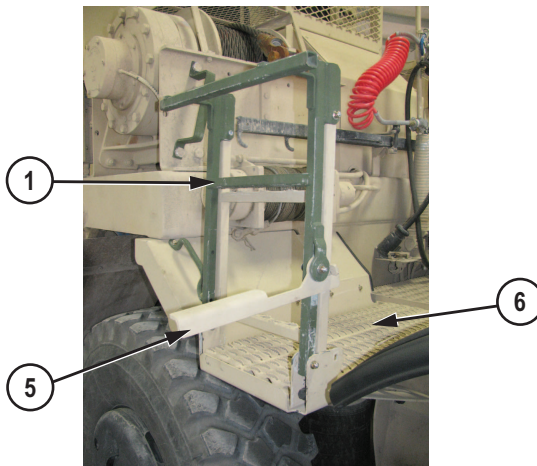
*Figure 4. Stow Catwalk Ladder.*

2. With left hand, grasp support (4) and pull catwalk ladder (1) up.

**STOW CATWALK LADDER - Continued**

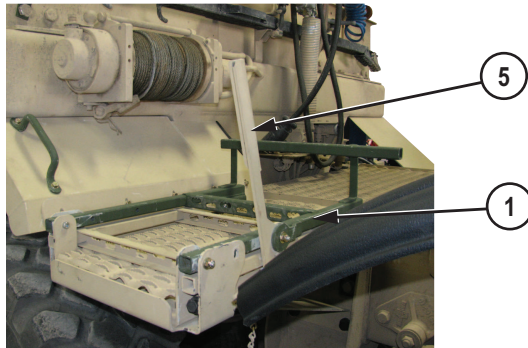
*Figure 5. Stow Catwalk Ladder.*

3. As catwalk ladder (1) passes vertical, grasp catwalk ladder handle (5) with right hand and lower catwalk ladder (1) onto deck (6).



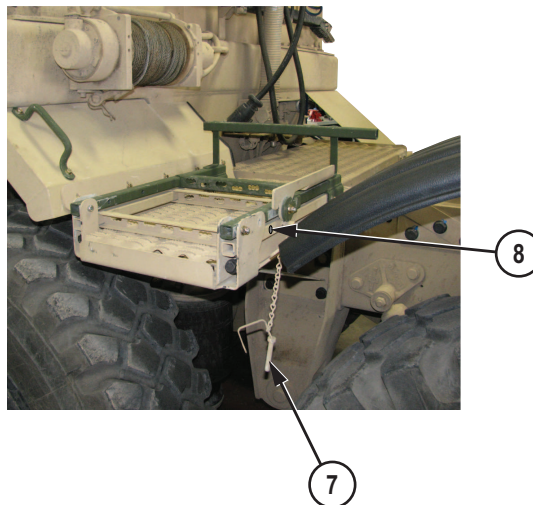
*Figure 6. Stow Catwalk Ladder.*

4. Push catwalk ladder handle (5) down, until it is flush against catwalk ladder (1).

**STOW CATWALK LADDER - Continued**

*Figure 7. Stow Catwalk Ladder.*

5. Install pin (7) in hole (8).



*Figure 8. Stow Catwalk Ladder.*

**END OF TASK**

**END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE OPERATE CAB INTERNAL LIGHTS

---

### INITIAL SETUP:

Not Applicable

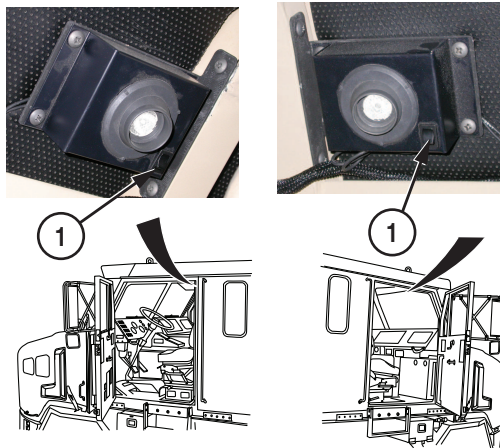
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### OPERATE MAP LIGHTS

#### NOTE

- Ensure battery disconnect switch is in ON position.
- B.O. SELECT switch must be in off position for cab internal lights to operate.

1. Press map light switch (1) up to turn on.



*Figure 1. Operate Map Lights.*

2. Press map light switch (1) down to turn off.

### END OF TASK

## OPERATE PANEL LIGHTS

### NOTE

Ensure battery disconnect switch is in ON position.

1. Push IGNITION/ENGINE STOP switch (1) up to IGNITION position.

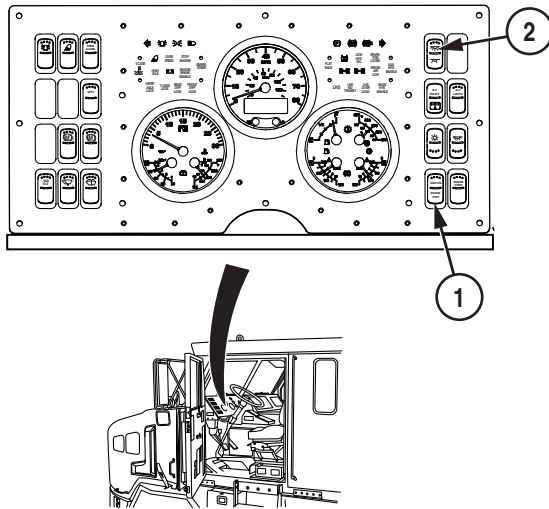


Figure 2. Operate Panel Lights.

### NOTE

- Each momentary upward press of switch increases light intensity by 5 percent.
  - Pressing and holding switch in upward position for three seconds will increase light intensity to 100 percent.
2. Press dimmer switch (2) up to brighten instrument panel, switches, transmission range selector, and Heating, Ventilation, and Air Conditioning (HVAC) panel lights.

### NOTE

- Each momentary downward press of switch decreases light intensity by 5 percent.
- Pressing and holding switch in downward position for three seconds will decrease light intensity to 10 percent.



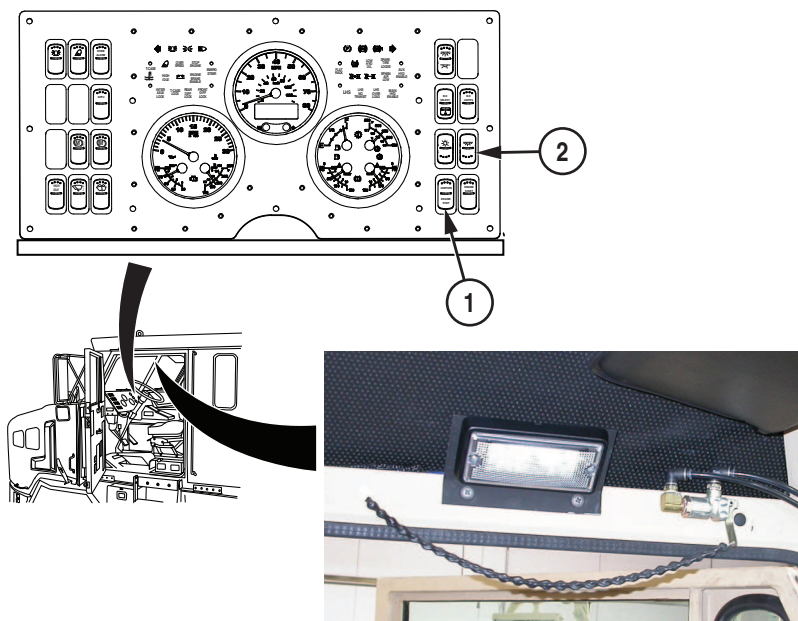
**OPERATE PANEL LIGHTS - Continued**

3. Press dimmer switch (2) down to dim instrument panel, switches, transmission range selector, and HVAC panel lights.

**END OF TASK****OPERATE DOME LIGHT****NOTE**

- Ensure battery disconnect switch is in ON position.
- B.O. SELECT switch must be in off position for cab internal lights to operate.

1. Push IGNITION/ENGINE STOP switch (1) up to IGNITION position.



*Figure 3. Operate Dome Light.*

2. Push dome light switch (2) up to turn on.

**OPERATE DOME LIGHT - Continued**

3. Push dome light switch (2) down to turn off.

**END OF TASK****END OF WORK PACKAGE**

---

## OPERATOR MAINTENANCE

### OPERATE BEACON AND EXTERNAL-MOUNTED WORK LIGHTS

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#### INITIAL SETUP:

Not Applicable

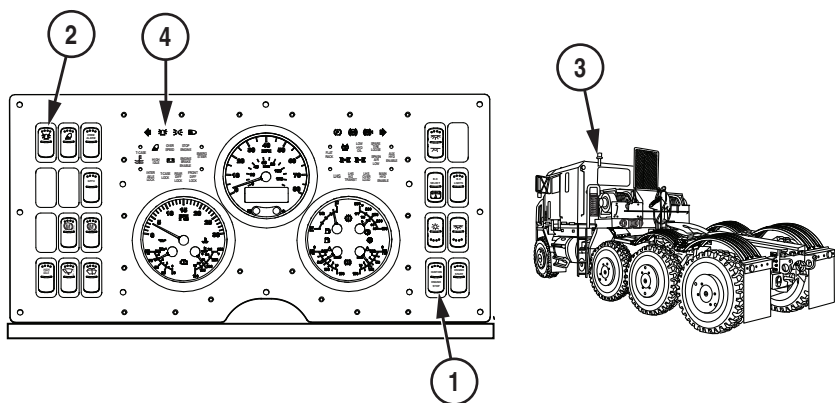
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#### OPERATE BEACON LIGHT

#### NOTE

Beacon light will not operate when B.O. SELECT switch is set to on position.

1. IGNITION/ENGINE STOP switch (1) to on position.



*Figure 1. Operate Beacon Light.*

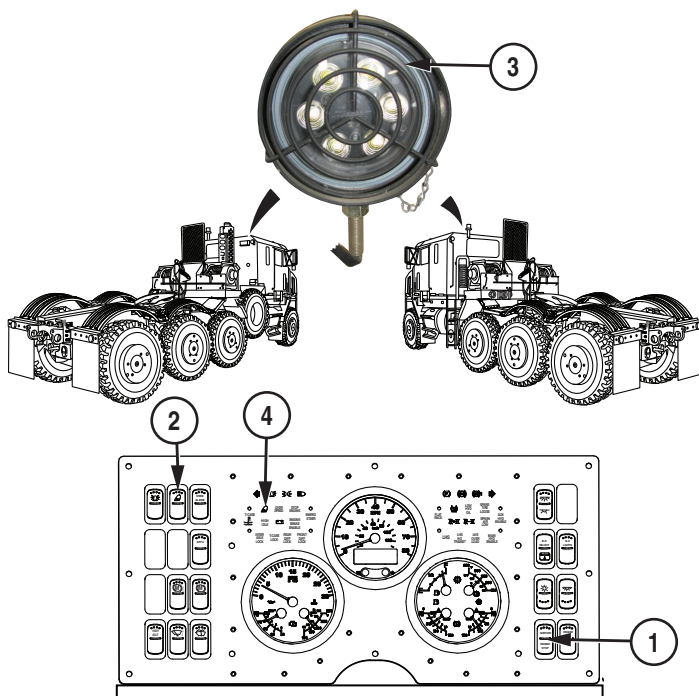
2. Push beacon light switch (2) up to turn beacon light (3) on. Beacon light indicator (4) will illuminate (green).
3. Push beacon light switch (2) down to turn beacon light (3) off. Beacon light indicator (4) will go out.

#### END OF TASK

**OPERATE EXTERNAL-MOUNTED WORK LIGHTS****NOTE**

External-mounted work lights will not operate when B.O. SELECT switch is set to on position.

1. IGNITION/ENGINE STOP switch (1) to on position.



*Figure 2. Operate External-Mounted Work Lights.*

2. Push work lights switch (2) up to turn work lights (3) on. Work lights indicator (4) will illuminate (green).
3. Push work lights switch (2) down to turn work lights (3) off. Work lights indicator (4) will go out.

**END OF TASK**

**END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE OPERATE EMERGENCY FLASHERS

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### INITIAL SETUP:

Not Applicable

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### OPERATE EMERGENCY FLASHERS

#### NOTE

- (WP 0026) must be in off position for emergency flashers to operate.
  - Emergency flashers will work with engine switch in any position.
1. Push in (WP 0015) (1). Turn indicators (2) and (3), and composite lights (4) and (5) will flash simultaneously at approximately once per second.

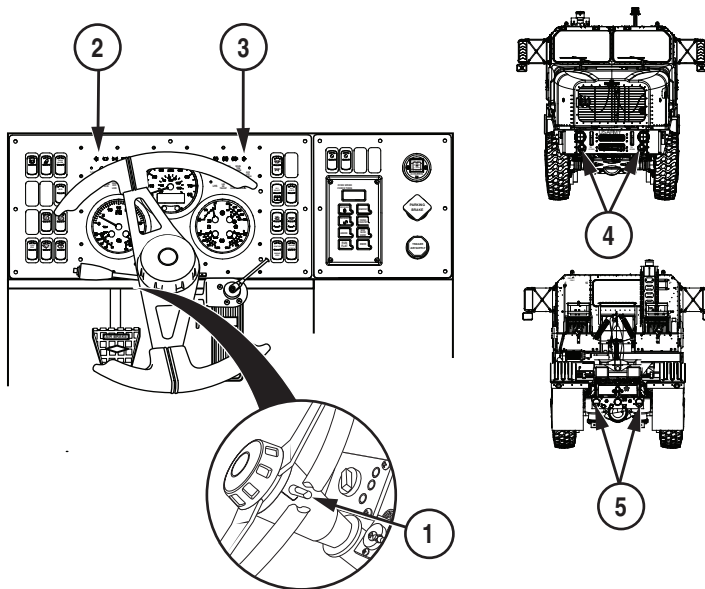


Figure 1. Operate Emergency Flashers.

#### NOTE

Perform Step (2) when emergency flashers are no longer desired.

**OPERATE EMERGENCY FLASHERS - Continued**

2. Pull out (WP 0015) (1) when emergency flashers are no longer desired. Turn indicators (2) and (3) and composite lights (4) and (5) will go out.

**END OF TASK****END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE OPERATE TURN SIGNALS

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### INITIAL SETUP:

Not Applicable

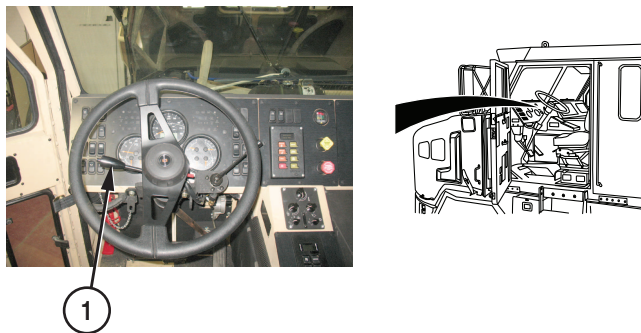
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### TURN SIGNAL OPERATION

#### NOTE

Verify battery disconnect switch (WP 0023) is in ON position.

Push turn signal lever (1) up to activate right turn signal. Pull turn signal lever (1) down to activate left turn signal.



*Figure 1. Turn Signal Operation.*

**END OF TASK**

**END OF WORK PACKAGE**





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## OPERATOR MAINTENANCE OPERATE PORTABLE WORK LIGHT

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### INITIAL SETUP:

Not Applicable

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### CONNECT PORTABLE WORK LIGHT

#### NOTE

- B. O. (black out) SELECT switch must be off for external lights to operate.
  - Driver side tunnel panel, driver side exterior, and passenger side exterior portable work lights operate the same way. Passenger side exterior portable work light shown.
1. Retrieve portable work light (1) and portable work light coiled wire harness (2) from front stowage box (3).

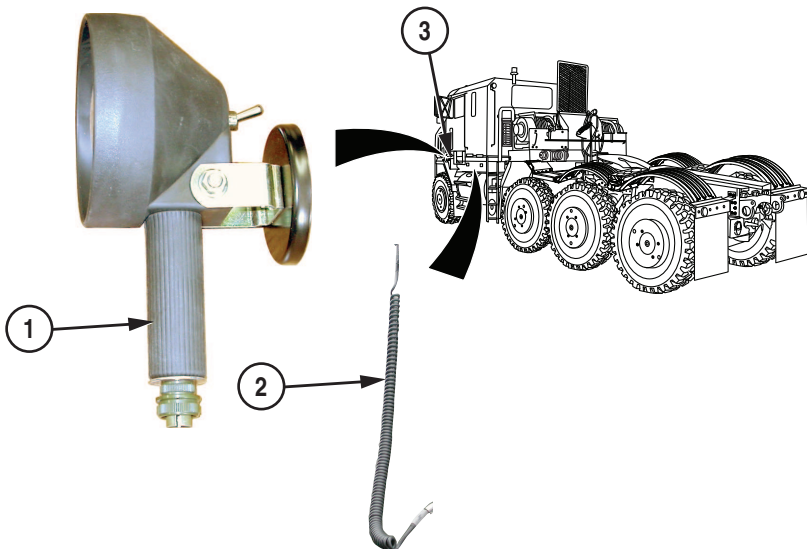
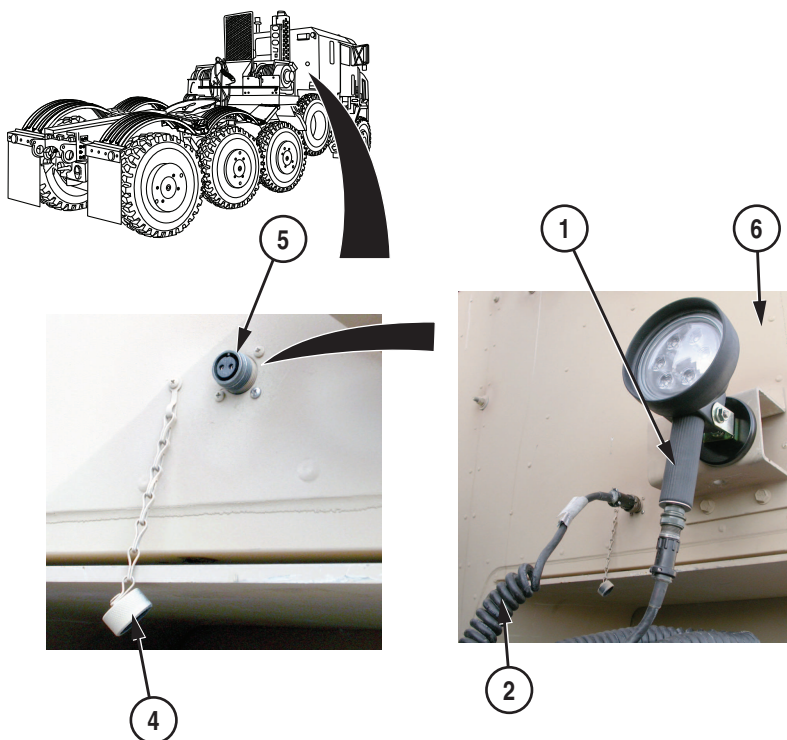


Figure 1. Connect Portable Work Light.

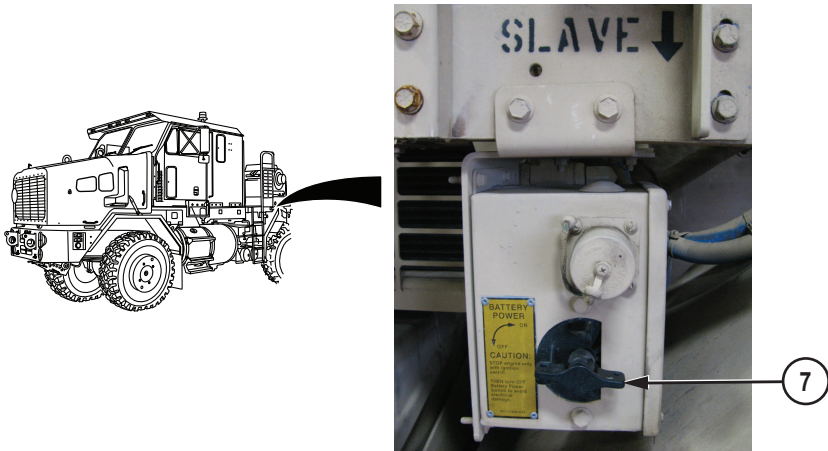
**CONNECT PORTABLE WORK LIGHT - Continued**

2. Connect female end of portable work light coiled wire harness (2) to portable work light (1).
3. Remove connector cover (4) from portable work light connector (5) on rear of cab (6).



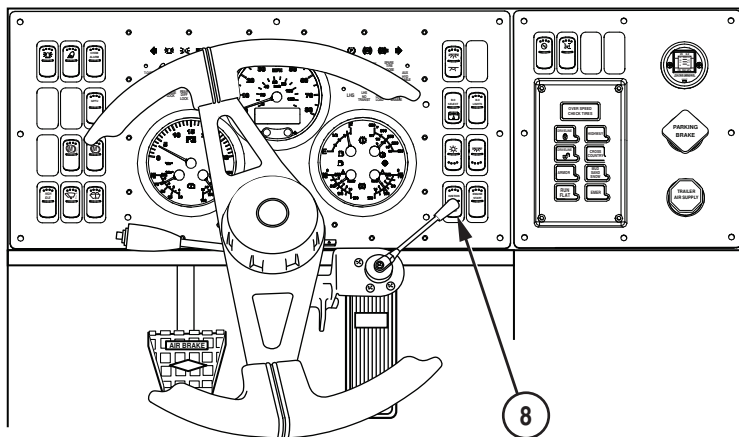
*Figure 2. Connect Portable Work Light.*

4. Connect free end of portable work light coiled wire harness (2) to portable work light connector (5).
5. Set battery disconnect switch (7) to ON position.

**CONNECT PORTABLE WORK LIGHT - Continued**

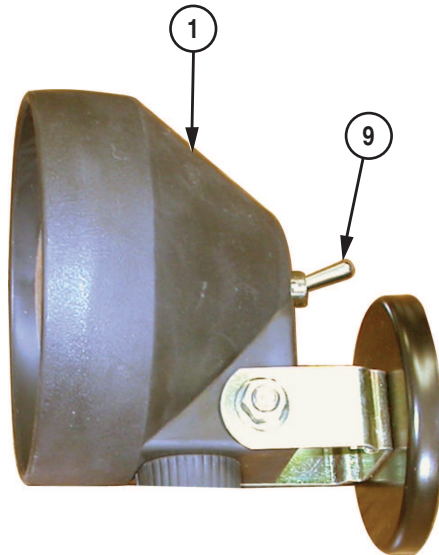
*Figure 3. Connect Portable Work Light.*

6. Push IGNITION/ENGINE STOP switch (8) up to IGNITION position.



*Figure 4. Connect Portable Work Light.*

7. Push portable work light on/off switch (9) down to turn portable work light (1) on or up to turn portable work light (1) off.

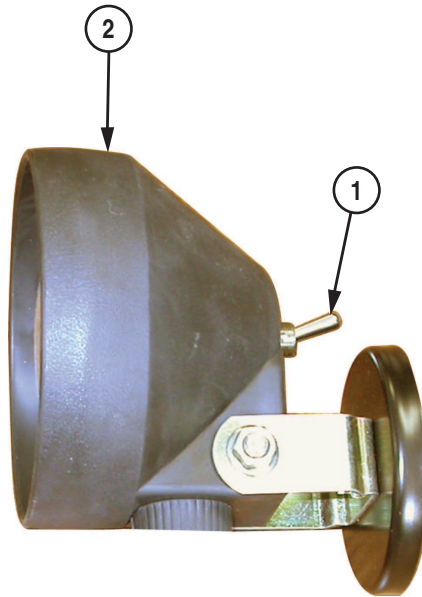
**CONNECT PORTABLE WORK LIGHT - Continued**

*Figure 5. Connect Portable Work Light.*

**END OF TASK****STOW PORTABLE WORK LIGHT****NOTE**

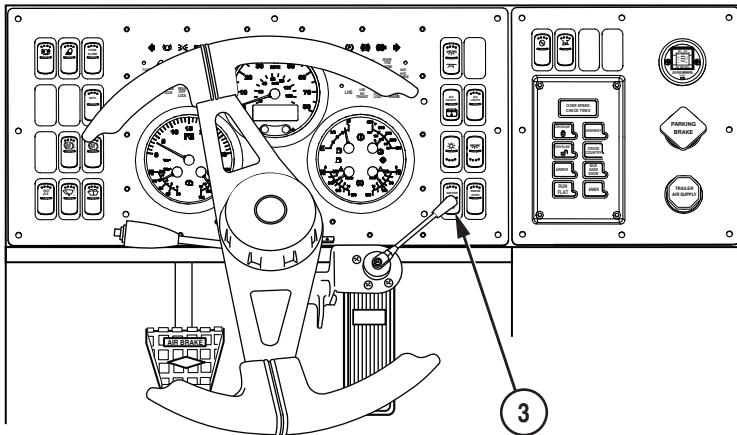
Driver side tunnel panel, driver side exterior, and passenger side exterior portable work lights are disconnected the same way. Passenger side exterior portable work light shown.

1. Push portable work light on/off switch (1) up to turn portable work light (2) off.

**STOW PORTABLE WORK LIGHT - Continued**

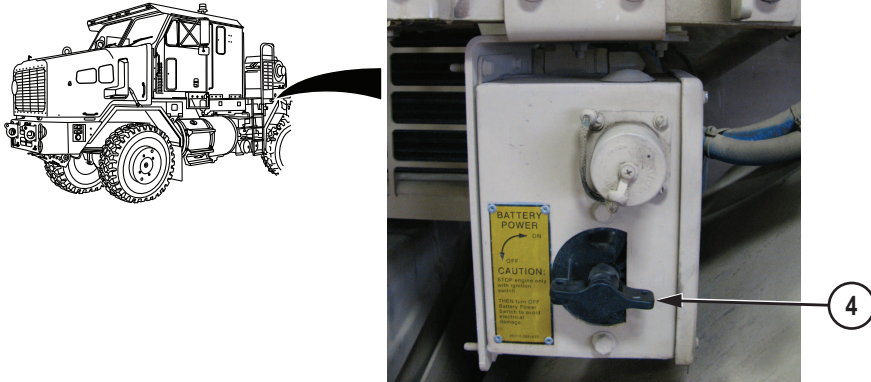
*Figure 6. Stow Portable Work Light.*

2. Push IGNITION/ENGINE STOP switch (3) down to ENGINE STOP position.



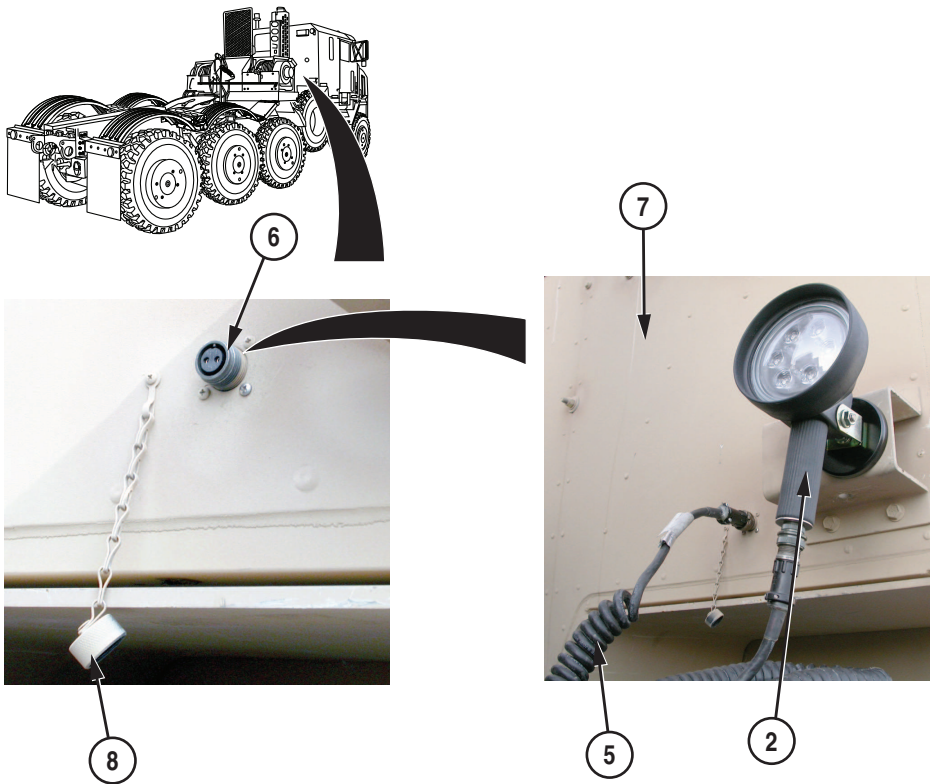
*Figure 7. Stow Portable Work Light.*

3. Set battery disconnect switch (4) to OFF position.

**STOW PORTABLE WORK LIGHT - Continued**

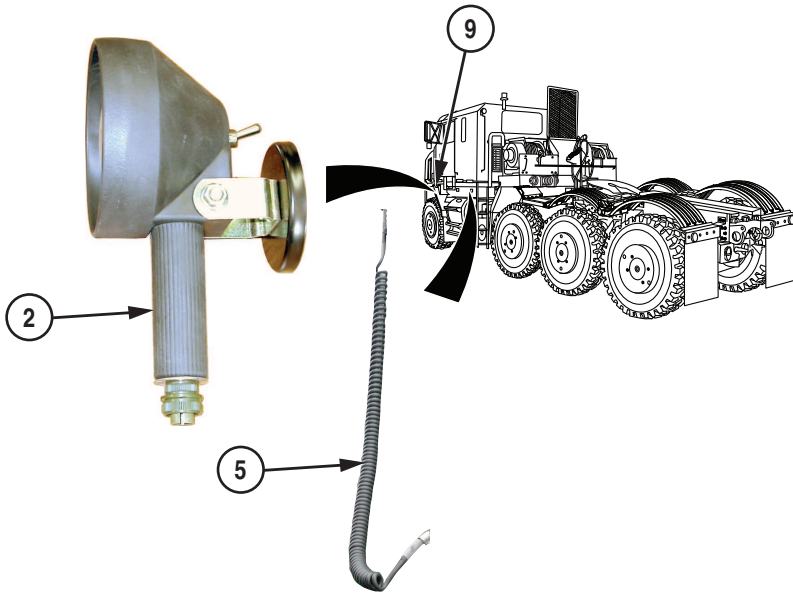
*Figure 8. Stow Portable Work Light.*

4. Disconnect portable work light coiled wire harness (5) from portable work light connector (6) on rear of cab (7).

**STOW PORTABLE WORK LIGHT - Continued**

*Figure 9. Stow Portable Work Light.*

5. Install connector cover (8) on portable work light connector (6).
6. Disconnect portable work light coiled wire harness (5) from portable work light (2).

**STOW PORTABLE WORK LIGHT - Continued**

*Figure 10. Stow Portable Work Light.*

7. Stow portable work light (2) and portable work light coiled wire harness (5) in front stowage box (9).

**END OF TASK**

**END OF WORK PACKAGE**



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## **OPERATOR MAINTENANCE OPERATE SERVICE DRIVE LIGHTS**

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### **INITIAL SETUP:**

Not Applicable

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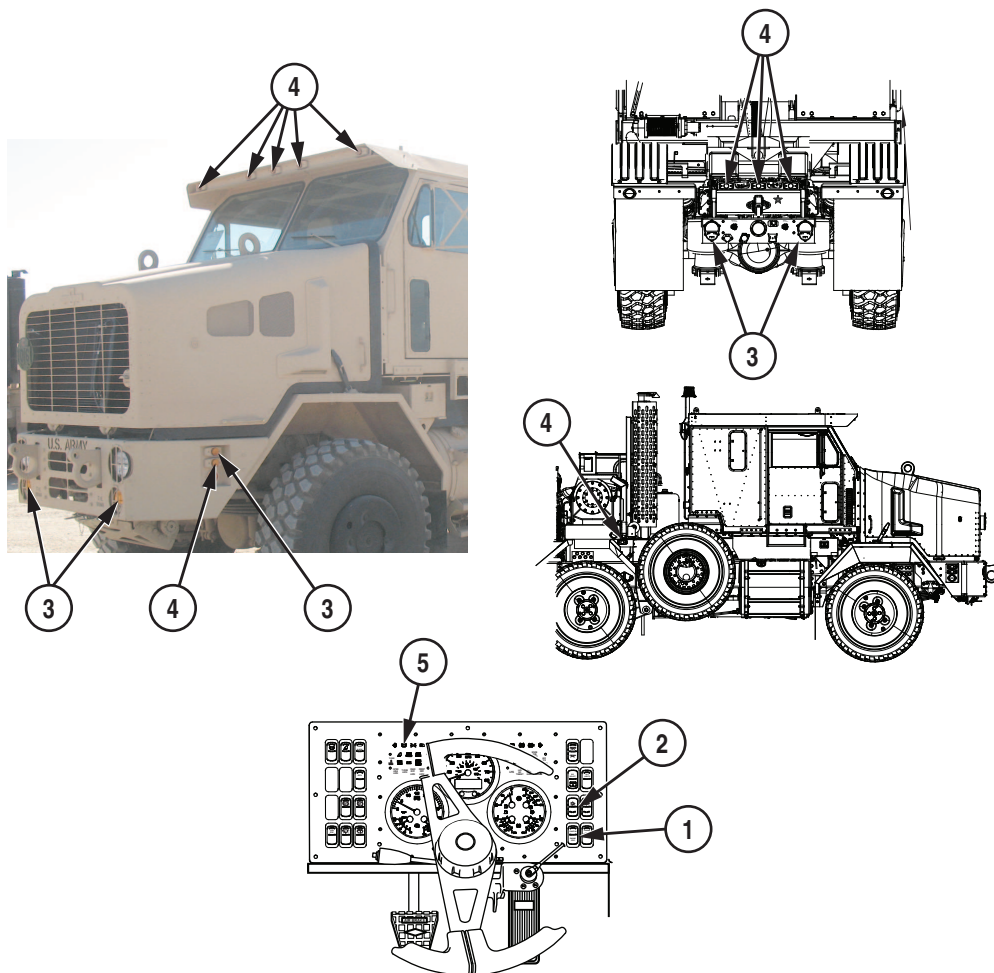
### **TURN PARKING AND CLEARANCE LIGHTS ON**

#### **CAUTION**

Failure to place light switches in the off position when Heavy Equipment Transporter (HET) Tractor is not in use may cause battery and/or vehicle damage.

#### **NOTE**

- Master lighting switch/service drive lights will not operate unless battery disconnect switch is set to ON position.
  - Master lighting switch/service drive lights will not operate when B.O. SELECT switch is set to on position.
1. Push IGNITION/ENGINE STOP switch (1) up to IGNITION position.

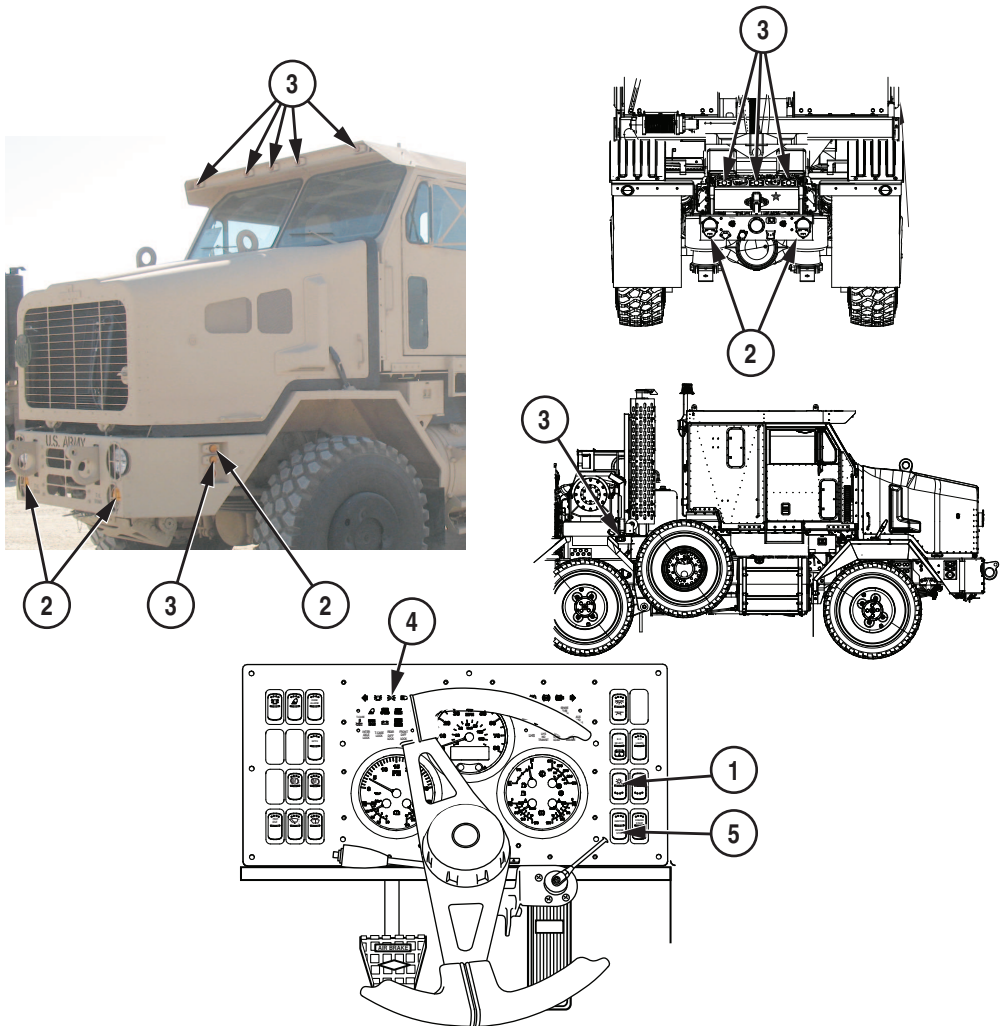
**TURN PARKING AND CLEARANCE LIGHTS ON - Continued**

*Figure 1. Turn Parking and Clearance Lights On.*

2. Push master lighting switch (2) up to center position to turn parking lights (3) and clearance/marker lights (4) on. Clearance light indicator (5) will illuminate (green).

**END OF TASK****TURN PARKING AND CLEARANCE LIGHTS OFF**

1. Push master lighting switch (1) down to off position to turn parking lights (2) and clearance/marker lights (3) off. Clearance light indicator (4) will go out.

**TURN PARKING AND CLEARANCE LIGHTS OFF - Continued**

*Figure 2. Turn Parking and Clearance Lights Off.*

2. Push IGNITION/ENGINE STOP switch (5) down to ENGINE STOP position.

**END OF TASK**

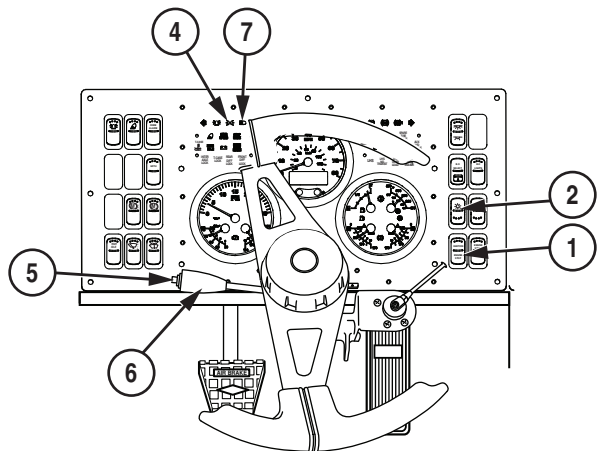
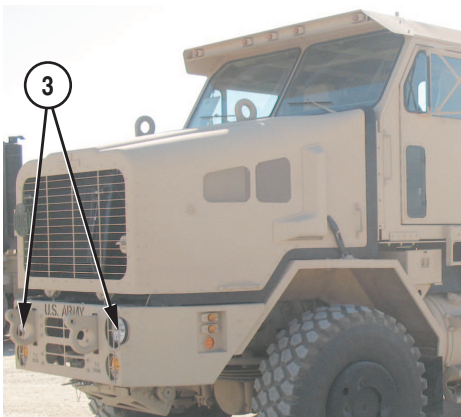
**TURN HEADLIGHTS ON****CAUTION**

Failure to place light switches in the off position when vehicle is not in use may cause battery and/or vehicle damage.

**NOTE**

- Parking lights and clearance/marker lights are on when headlights are on.
- Master lighting switch/service drive lights will not operate when B.O. SELECT switch is set to on position.

1. Push IGNITION/ENGINE STOP switch (1) up to IGNITION position.



*Figure 3. Turn Headlights On.*

2. Push master lighting switch (2) to full up position to turn headlights (3) on. Clearance light indicator (4) will illuminate (green).
3. Press headlight dimmer switch (5) on end of turn signal lever (6) to turn headlight high beams on/off. High beam indicator (7) illuminates blue when headlight high beams are on.

**END OF TASK**

**TURN HEADLIGHTS OFF**

1. Push master lighting switch (1) to full down position to turn headlights (2) off. Clearance light indicator (3) will go out.

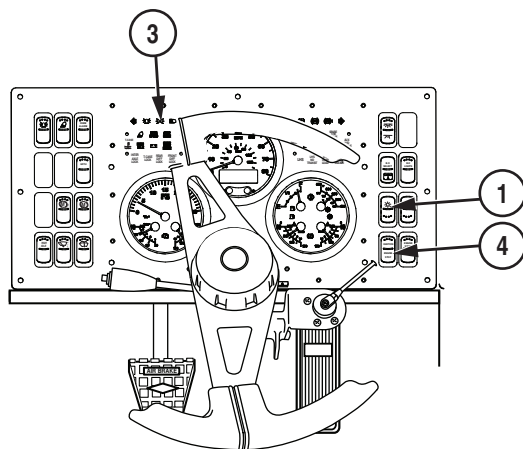
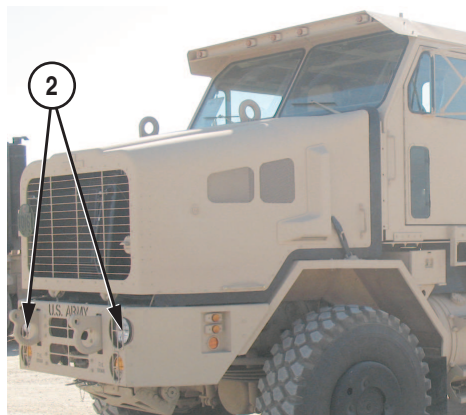


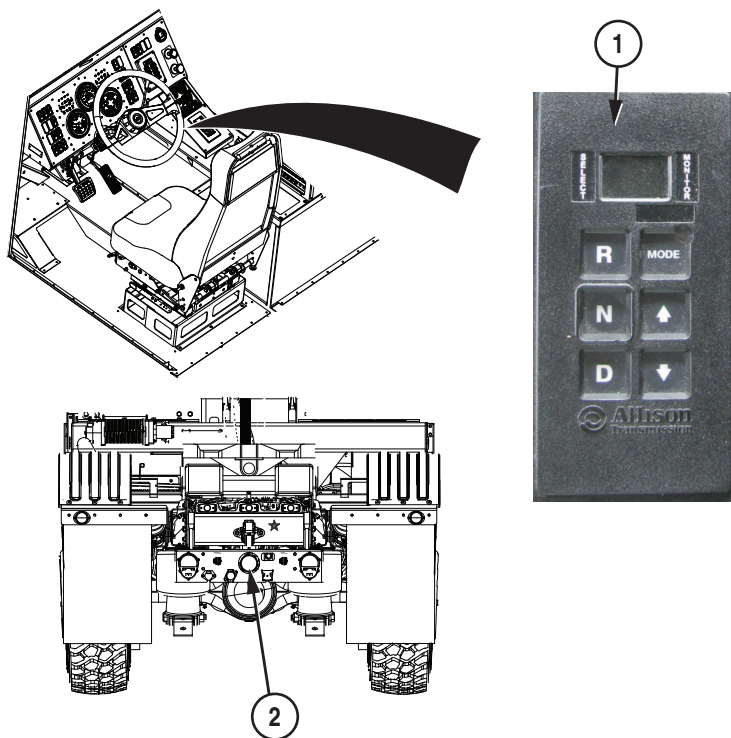
Figure 4. Turn Headlights Off.

2. Push IGNITION/ENGINE STOP switch (4) down to ENGINE STOP position.

**END OF TASK****TURN REVERSE LIGHT ON****NOTE**

- HET Tractor engine must be running for reverse light and reverse alarm to function.
- Reverse light will not operate when B.O. SELECT switch is set to on position.

1. Start engine. (WP 0045)

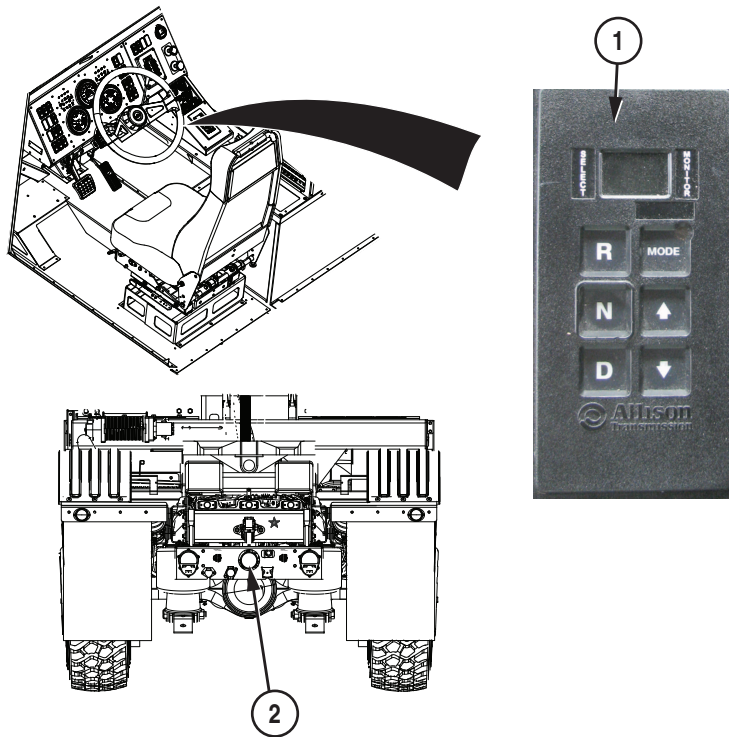
**TURN REVERSE LIGHT ON - Continued**

*Figure 5. Turn Reverse Light On.*

2. Set transmission range selector (WP 0064) (1) to R (reverse) to turn reverse light (2) on.

**END OF TASK****TURN REVERSE LIGHT OFF**

1. Set transmission range selector (WP 0064) (1) to a gear range other than R (reverse) to turn reverse light (2) off.

**TURN REVERSE LIGHT OFF - Continued**

*Figure 6. Turn Reverse Light Off.*

2. Shut OFF engine. (WP 0050)

**END OF TASK**

**END OF WORK PACKAGE**





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## **OPERATOR MAINTENANCE OPERATE BLACKOUT LIGHTS**

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### **INITIAL SETUP:**

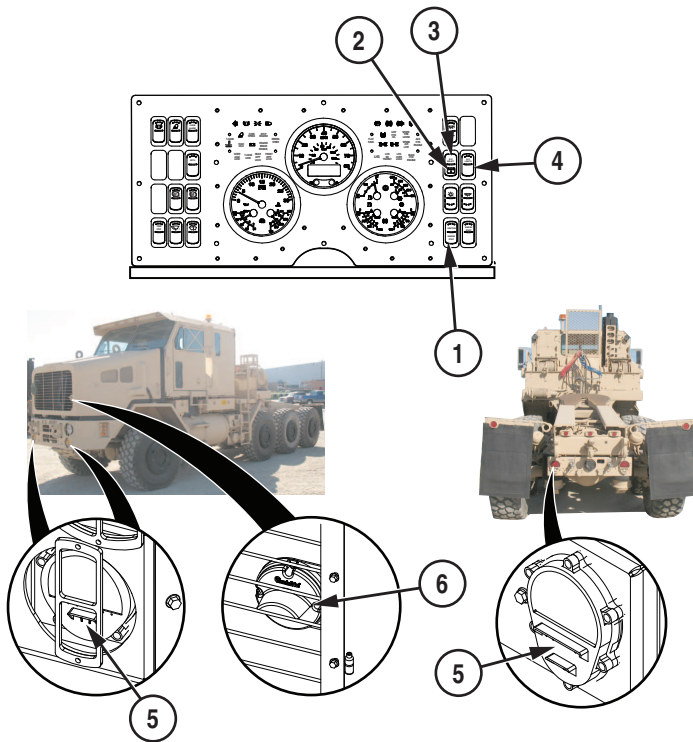
Not Applicable

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### **TURN BLACKOUT LIGHTS ON**

#### **NOTE**

- Ensure that battery disconnect (WP 0023) switch is set to ON position.
  - City horn (WP 0015), reverse alarm, reverse light (WP 0043), cab internal lights (WP 0038), cab external lights (WP 0039), emergency flashers (WP 0040), turn signals (WP 0041), and service drive lights (WP 0043) will not operate when B.O. SELECT switch is set to on position.
  - Safety lock on B.O. SELECT switch must be pressed and held before B.O. SELECT switch can be operated.
  - Safety lock on B.O. SELECT switch locks switch in on position.
1. Push IGNITION/ENGINE STOP switch (1) up to IGNITION position.

**TURN BLACKOUT LIGHTS ON - Continued**

*Figure 1. Turn Blackout Lights On.*

2. Push safety lock (2) up and hold while pushing B.O. SELECT switch (3) up to on position.
3. Push B.O. LIGHTS switch (4) up (center position) to turn blackout composite lights (5) on.
4. Push B.O. LIGHTS switch (4) fully up to turn blackout drive light (6) on.

**END OF TASK****TURN BLACKOUT LIGHTS OFF****NOTE**

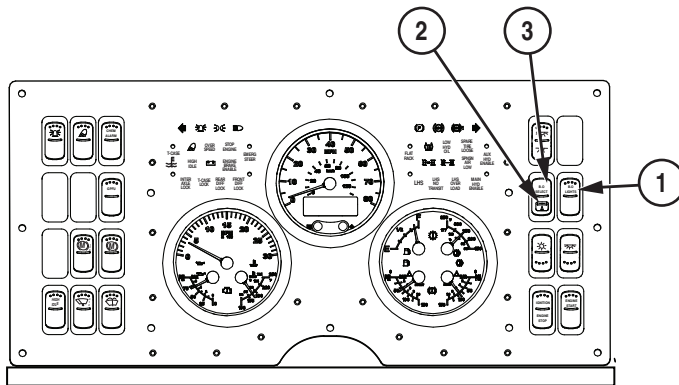
- City horn (WP 0015), reverse alarm, reverse light (WP 0043), cab internal lights (WP 0038), cab external lights (WP 0039), emergency flashers (WP 0040), turn signals (WP 0041), and service drive

**TURN BLACKOUT LIGHTS OFF - Continued**

lights (WP 0043) will not operate when B.O. SELECT switch is set to on position.

- Safety lock on B.O. SELECT switch must be pressed and held before B.O. SELECT switch can be operated.
- Safety lock on B.O. SELECT switch locks switch in on position.

1. Push B.O. LIGHTS switch (1) to full down position.



*Figure 2. Turn Blackout Lights Off.*

2. Push safety lock (2) up and hold while pushing B.O. SELECT switch (3) down to off position to turn all blackout lights off.
3. Push IGNITION/ENGINE STOP switch (1) down to ENGINE STOP position.

**END OF TASK**

**END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE START ENGINE

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### INITIAL SETUP:

Not Applicable

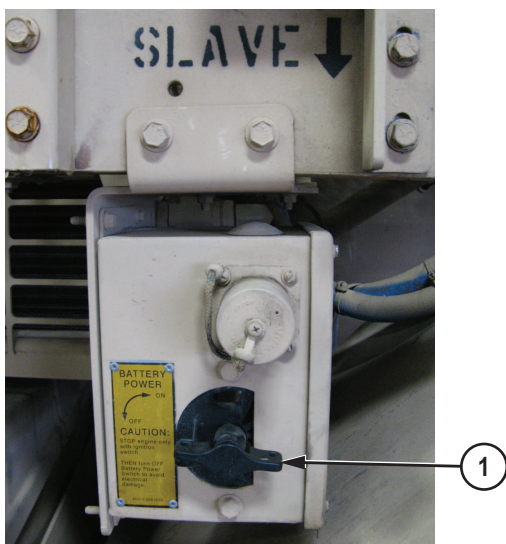
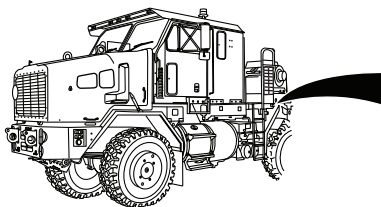
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### COLD ENGINE STARTING

#### NOTE

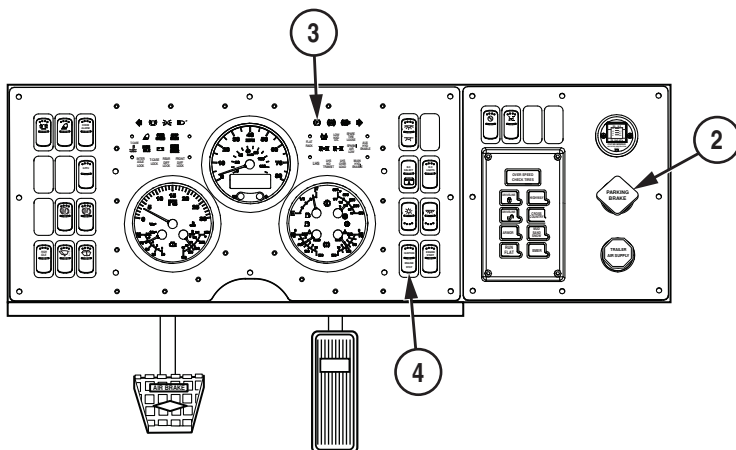
**For Troubleshooting Procedures Only:** Perform the following engine start procedures exactly, paying close attention to Steps 3 and 8. Do not push service brake pedal before engine is started. Pushing service brake pedal before engine is started introduces a false ABS fault code.

1. Set battery disconnect switch (1) to ON position.



*Figure 1. Cold Engine Starting.*

2. Pull out PARKING BRAKE control (WP 0049) (2) to apply parking brakes. Parking brake indicator (3) will illuminate (red) when IGNITION/ENGINE STOP switch (4) is set to IGNITION position.

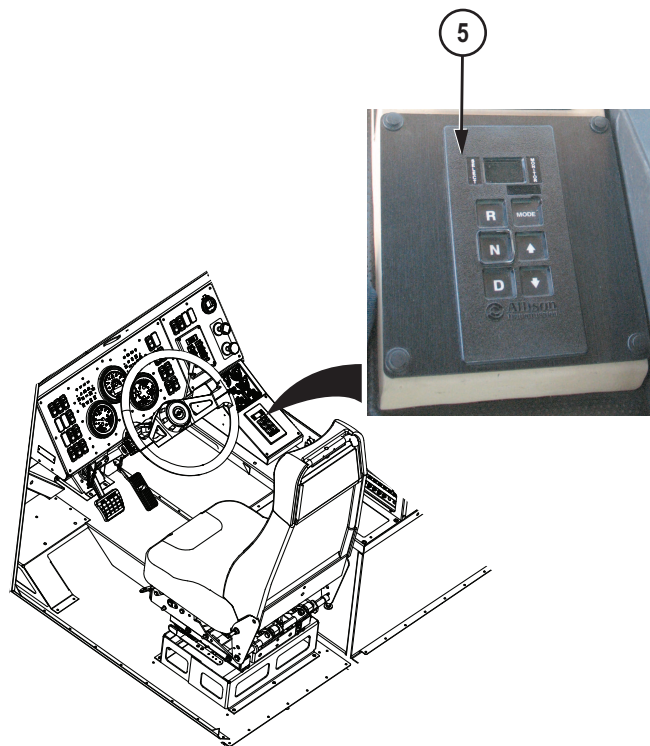
**COLD ENGINE STARTING - Continued**

*Figure 2. Cold Engine Starting.*

**NOTE**

**For Troubleshooting Procedures Only:** After completing Step (3), wait 15 seconds for Electronic Control Units to reset and system self-diagnostic to complete.

3. Push IGNITION/ENGINE STOP switch (4) up to IGNITION position.
4. Set transmission range selector (WP 0064) (5) to N (neutral).

**COLD ENGINE STARTING - Continued**

*Figure 3. Cold Engine Starting.*

**WARNING**

Before starting and moving Heavy Equipment Transporter (HET) Tractor, check on and around HET Tractor for other personnel. Failure to comply may result in serious injury or death to personnel.

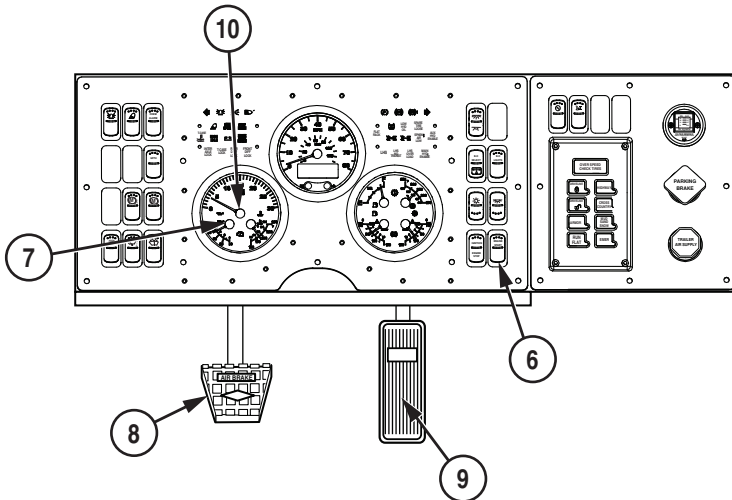
**CAUTION**

If engine fails to start within 15 seconds, release ENGINE START switch and allow starter motor to cool at least two minutes before trying again. Failure to comply may result in damage to equipment.

**NOTE**

Perform Step (5) up to seven times. If engine does not start after seven attempts, notify field level maintenance.

5. Push ENGINE START switch (6) up and hold for 15 seconds or until engine starts.

**COLD ENGINE STARTING - Continued***Figure 4. Cold Engine Starting.***NOTE**

- ENGINE START switch will spring back to off position when released.
- Brake system failure (low air) indicator may illuminate upon engine start.

6. Release ENGINE START switch (6) immediately upon engine start.

**CAUTION**

- Do not push ENGINE START switch up to start position while engine is running. Failure to comply may result in damage to equipment.
- If engine oil pressure gauge does not indicate engine oil pressure within 10 to 15 seconds after starting engine, immediately shut OFF engine (WP 0050) and notify field level maintenance. Failure to comply may result in damage to equipment.

7. With engine at idle, (625 to 725 rpm), check that engine oil pressure gauge (7) reads at least 5 psi (0.34 bar). During normal operations, engine oil pressure should range between 50 and 70 psi (3.4 and 4.8 bar).

**NOTE**

- **For Troubleshooting Procedures Only:** Complete Step (8) only if performing troubleshooting procedures.



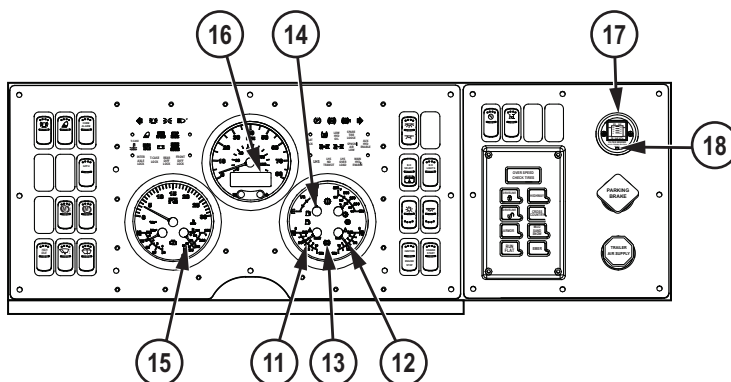
**COLD ENGINE STARTING - Continued**

- Skip to Step (9) if not performing troubleshooting procedures.
8. Apply and release service brake pedal (WP 0013) (8).
  9. Apply throttle pedal (WP 0013) (9) until tachometer (10) reads 800 to 1000 rpm.
  10. Run engine at 800 to 1000 rpm for about 5 minutes.

**CAUTION**

If air pressure does not reach 60 to 130 psi (4 to 9 bar) after warm-up, shut OFF engine (WP 0050) and notify field level maintenance. Failure to comply may result in damage to equipment.

11. Check that front (11) and rear (12) air pressure gauges read 60 to 130 psi (4 to 9 bar). Brake system failure (low air) indicator (13) will illuminate (red) until both gauges reach 60 to 75 psi (4 to 5 bar).



*Figure 5. Cold Engine Starting.*

12. Check that fuel gauge (14) shows enough fuel to complete mission.

**NOTE**

Coolant temperature gauge may not show reading at engine idle.

13. Check that coolant temperature gauge (15) reads less than 219°F (104°C). Normal coolant temperature range during operations is 180 to 200°F (82 to 93°C).

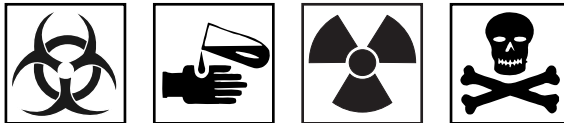
**NOTE**

Battery voltage readout is located in top right corner of LCD.

14. Check that battery voltage readout (16) reads between 24 and 28 volts.

**COLD ENGINE STARTING - Continued**

15. Check that AIR FILTER RESTRICTION indicator (17) indicates in green range of scale (below 20 in. of water).
16. If AIR FILTER RESTRICTION indicator (17) indicates in the red range of scale (more than 20 in. of water), press and release RESET button (18).

**WARNING**

After Chemical, Biological, Radiological, and Nuclear (CBRN) exposure of Heavy Equipment Transporter (HET) Tractor, all air filters shall be handled with extreme care. Unprotected personnel can experience injury or death if residual toxic agents or radioactive material are present. If HET Tractor is exposed to chemical or biological agents, servicing personnel shall wear protective mask, hood, protective overgarments, and chemical protective gloves and boots. All contaminated air filters shall be placed in double-lined plastic bags and moved swiftly to a segregation area away from the work site. The same procedure applies for radioactive dust contamination. The Company CBRN team should measure the radiation prior to filter removal to determine the extent of safety procedures required per the CBRN Annex to the unit Standard Operating Procedures (SOP). The segregation area in which the contaminated air filters are temporarily stored shall be marked with appropriate CBRN placards. Final disposal of contaminated air filters shall be in accordance with local SOP. Decontamination operation shall be in accordance with FM 3-11.5 and local SOP. Failure to comply may result in serious injury or death to personnel.

**NOTE**

Bouncing or jarring of AIR FILTER RESTRICTION indicator may cause indicator to indicate in red range of scale while air cleaner elements are still good.

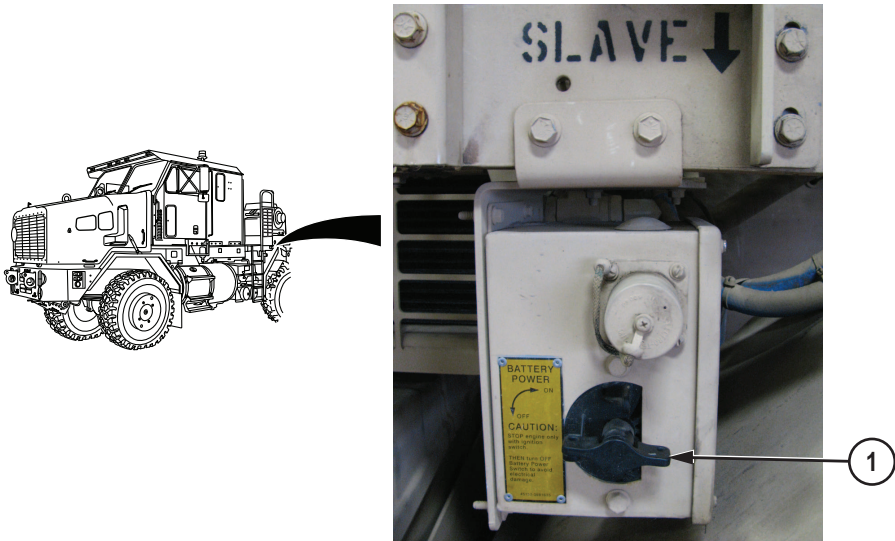
17. If AIR FILTER RESTRICTION indicator (17) still reads in the red zone of scale (more than 20 in. of water):
  - a. Shut OFF engine (WP 0050).
  - b. Contact field level maintenance to clean air filter elements.

**END OF TASK**

**WARM ENGINE STARTING****NOTE**

**For Troubleshooting Procedures Only:** Perform the following engine start procedures exactly, paying close attention to Steps 3 and 8. Do not push service brake pedal before engine is started. Pushing service brake pedal before engine is started introduces a false Anti-Lock Brake System (ABS) fault code.

1. Set battery disconnect switch (1) to ON position.



*Figure 6. Warm Engine Starting.*

2. Pull out PARKING BRAKE control (WP 0049) (2) to apply parking brakes. Parking brake indicator (3) will illuminate (red) when IGNITION/ENGINE STOP switch (4) is set to IGNITION position.

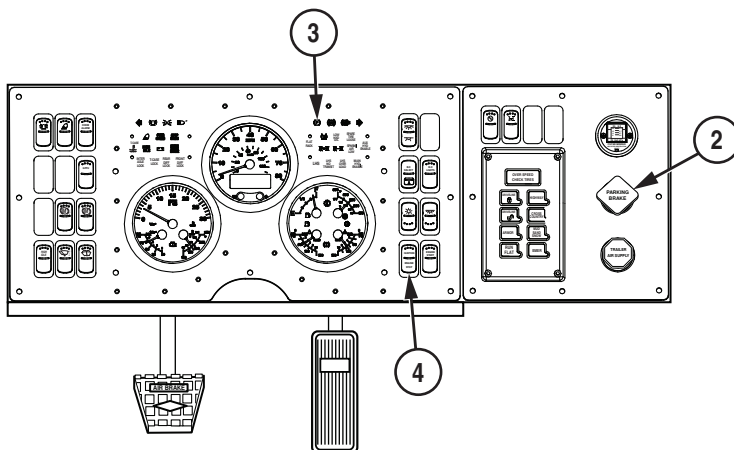
**WARM ENGINE STARTING - Continued**

Figure 7. Warm Engine Starting.

**NOTE**

**For Troubleshooting Procedures Only:** After completing Step (3), wait 15 seconds for Electronic Control Units to reset and system self-diagnostic to complete.

3. Push IGNITION/ENGINE STOP switch (4) up to IGNITION position.
4. Set transmission range selector (WP 0064) (5) to N (neutral).

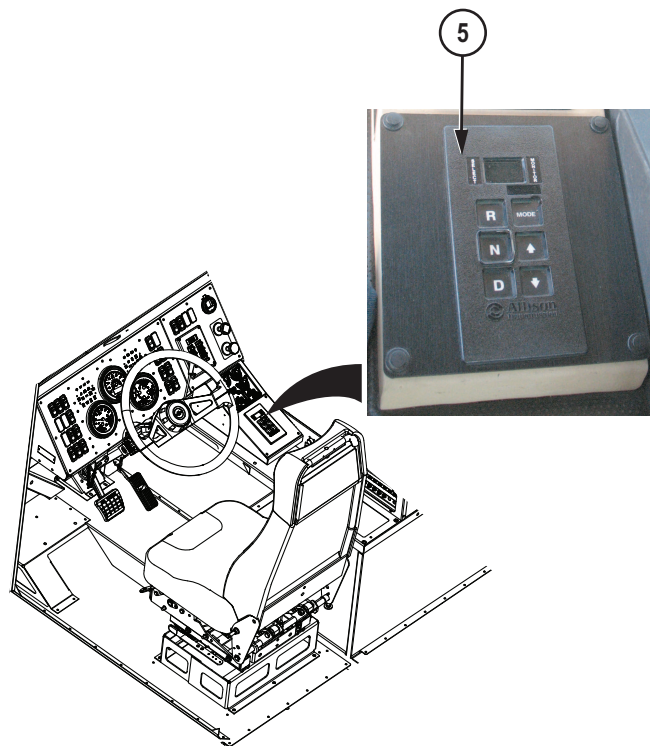
**WARM ENGINE STARTING - Continued**

Figure 8. Warm Engine Starting.

**WARNING**

Before starting and moving Heavy Equipment Transporter (HET) Tractor, check on and around HET Tractor for other personnel. Failure to comply may result in serious injury or death to personnel.

**CAUTION**

If engine fails to start within 15 seconds, release ENGINE START switch and allow starter motor to cool at least two minutes before trying again. Failure to comply may result in damage to equipment.

**NOTE**

Perform Step (5) up to seven times. If engine does not start after seven attempts, notify field level maintenance.

5. Push ENGINE START switch (6) up and hold for 15 seconds or until engine starts.

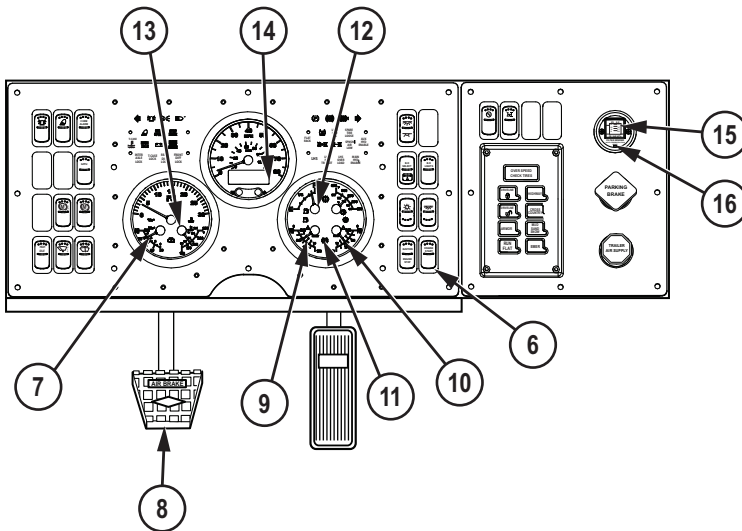
**WARM ENGINE STARTING - Continued**

Figure 9. Warm Engine Starting.

**NOTE**

- ENGINE START switch will spring back to off position when released.
- Brake system failure (low air) indicator may illuminate (red) upon engine start.

6. Release ENGINE START switch (6) immediately upon engine start.

**CAUTION**

- Do not push ENGINE START switch up to start position while engine is running. Failure to comply may result in damage to equipment.
- If engine oil pressure gauge does not indicate engine oil pressure within 10 to 15 seconds after starting engine, immediately shut OFF engine (WP 0050) and notify field level maintenance. Failure to comply may result in damage to equipment.

**NOTE**

- Minimum engine oil pressure for safe operation (vehicle moving) is 30 psi (2 bar).
- At idle, engine oil pressure can drop as low as 5 psi (0.34 bar), this is a normal condition.

**WARM ENGINE STARTING - Continued**

7. Check that engine oil pressure gauge (7) reads normal operating range of 40 to 70 psi (2.8 to 4.8 bar) at 1800 to 2100 rpm.

**NOTE**

- **For Troubleshooting Procedures Only:** Complete Step (8) only if performing troubleshooting procedures.
  - Skip to Step (9) if not performing troubleshooting procedures.
8. Apply and release service brake pedal (WP 0047) (8).
  9. Check that front (9) and rear (10) air pressure gauges read 60 to 130 psi (4 to 9 bar). Brake system failure (low air) indicator (11) will illuminate (red) until both gauges reach 60 to 75 psi (4 to 5 bar).
  10. Check that fuel gauge (12) shows enough fuel to complete mission.

**NOTE**

Coolant temperature gauge may not show reading at engine idle.

11. Check that coolant temperature gauge (13) does not read over 219°F (104°C). Normal coolant temperature range during operations is 180 to 200°F (82 to 93°C).

**NOTE**

Battery voltage readout is located in top right corner of LCD.

12. Check that battery voltage readout (14) reads between 24 and 28 volts.
13. If AIR FILTER RESTRICTION indicator (15) reads in the red zone of scale (more than 20 in. of water), press and release RESET button (16).

**WARNING**

After Chemical, Biological, Radiological, and Nuclear (CBRN) exposure of Heavy Equipment Transporter (HET) Tractor, all air filters shall be handled with extreme care. Unprotected personnel can experience injury or death if residual toxic agents or radioactive material are present. If HET Tractor is exposed to chemical or biological agents, servicing personnel shall wear protective mask, hood, protective overgarments, and chemical protective gloves and boots. All contaminated air filters shall be placed in double-lined plastic bags and moved swiftly to a segregation area away from the work site. The same procedure applies for radioactive dust

**WARM ENGINE STARTING - Continued**

contamination. The Company CBRN team should measure the radiation prior to filter removal to determine the extent of safety procedures required per the CBRN Annex to the unit Standard Operating Procedures (SOP). The segregation area in which the contaminated air filters are temporarily stored shall be marked with appropriate CBRN placards. Final disposal of contaminated air filters shall be in accordance with local SOP. Decontamination operation shall be in accordance with FM 3-11.5 and local SOP. Failure to comply may result in serious injury or death to personnel.

**NOTE**

Bouncing or jarring of AIR FILTER RESTRICTION indicator may cause indicator to indicate in red range of scale while air cleaner elements are still good.

14. If AIR FILTER RESTRICTION indicator (15) still reads in the red zone of scale (more than 20 in. of water):
  - a. Shut OFF engine (WP 0050).
  - b. Contact field level maintenance to clean air filter elements.

**END OF TASK****END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE ENGINE BRAKE OPERATION

---

### INITIAL SETUP:

Not Applicable

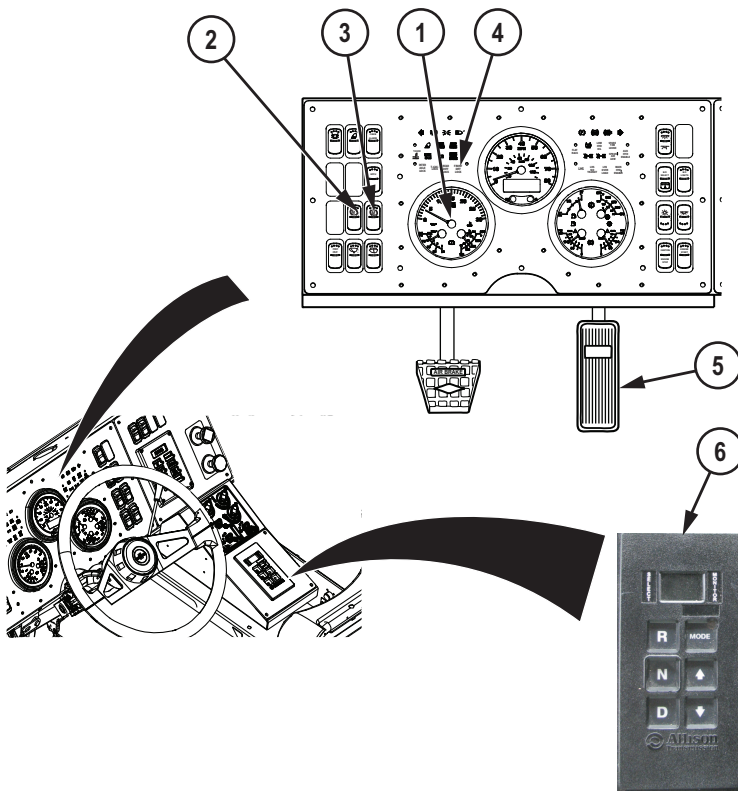
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### WARNING

Apply engine brake only when Heavy Equipment Transporter (HET) Tractor tires have good traction. Use of engine brake on slick surfaces can cause HET Tractor to skid. Failure to comply may result in serious injury or death to personnel.

### NOTE

- Engine must be running to operate engine brake retarder.
  - Use engine brake only when additional braking is required (i.e. descending grades).
  - Service brakes (WP 0047) must be used in addition to engine brakes for optimum braking capability.
  - Allow engine to warm up to operating temperature of 180 to 200°F (82 to 93°C).
  - Engine brake operates best when engine speed is between 1650 and 2100 rpm.
1. Ensure tachometer (1) reads between 1650 and 2100 rpm whenever engine brake is used.



*Figure 1. Engine Brake Operation.*

2. Set engine brake high/medium/low switch (2) to low (full down) position.
3. Push engine brake on/off switch (3) up to on position. ENGINE BRAKE ENABLE indicator (4) will illuminate (green).
4. Lift foot off throttle pedal (WP 0013) (5). Engine brake will automatically slow HET Tractor.
5. If too much braking occurs, set transmission range selector (WP 0064) (6) to a higher range.
6. If more braking is required, set engine brake high/medium/low switch (2) to medium (center) position, or high (full up) position (as required).

7. Check that tachometer (1) reads between 1650 and 2100 rpm whenever engine brake is used.

**END OF TASK**

**END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE SERVICE BRAKES OPERATION

---

### INITIAL SETUP:

Not Applicable

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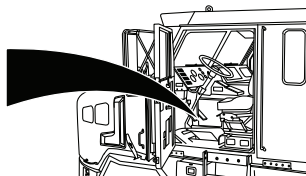
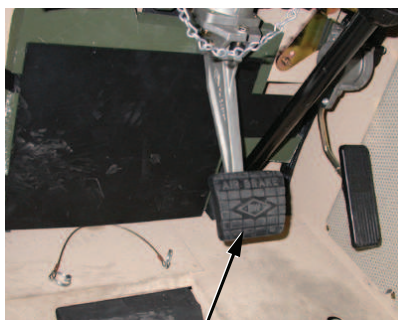
### SERVICE BRAKES OPERATION

#### WARNING

Repeated application of the brake pedal will deplete air supply and service brakes will not work until air pressure builds up again. Serious personal injury or death may result from loss of service brakes.

#### NOTE

Normal operating air pressure is 100 to 130 psi (6.9 to 8.6 bar). If air system pressure drops below 85 psi (5.9 bar), Central Tire Inflation System (CTIS) (WP 0052) will become inoperative. If air system pressure drops below 60 psi (4.1 bar), brake system failure (low air pressure) indicator will illuminate (red).



*Figure 1. Service Brakes Operation.*

1. Push down and hold service brake pedal (1) to apply service brakes and slow or stop Heavy Equipment Transporter (HET) Tractor (as needed).

**SERVICE BRAKES OPERATION - Continued**

2. Lift foot off service brake pedal (1) to release service brakes.

**END OF TASK****END OF WORK PACKAGE**

---

## OPERATOR MAINTENANCE TRAILER BRAKES OPERATION

---

### INITIAL SETUP:

Not Applicable

---

### TRAILER BRAKES OPERATION

#### NOTE

- During normal operation, service brakes of Heavy Equipment Transporter (HET) Tractor and a properly coupled trailer are both applied when service brake pedal (WP 0047) is pushed.
  - Trailer must be properly connected to HET Tractor air system (WP 0057) to operate trailer handbrake control lever.
1. Pull down trailer handbrake control lever (1) during trailer connect/disconnect operations (WP 0057), as required, to apply trailer brakes only.



Figure 1. Trailer Brakes Operation.

#### NOTE

Trailer handbrake control lever will automatically return to normal operating (up) position when released.

**TRAILER BRAKES OPERATION - Continued**

2. Release trailer handbrake control lever (1) to release trailer brakes.

**END OF TASK****END OF WORK PACKAGE**



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## **OPERATOR MAINTENANCE OPERATE PARKING BRAKE**

---

### **INITIAL SETUP:**

Not Applicable

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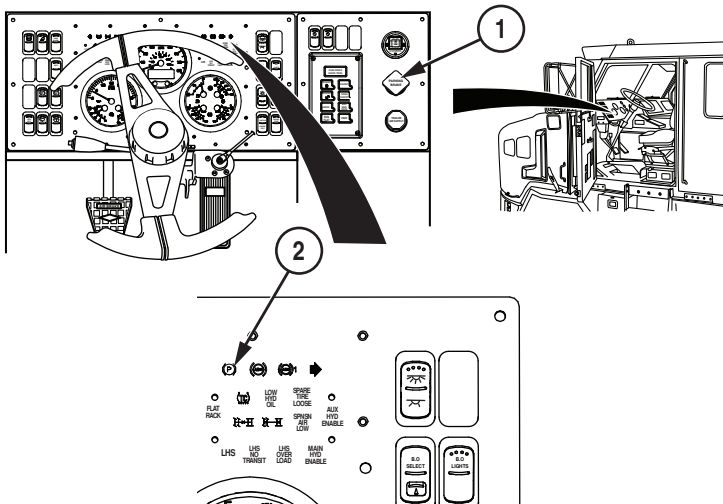
### **OPERATE PARKING BRAKE**

#### **CAUTION**

If trailer is connected, allow five seconds for trailer parking brakes to apply before releasing service brake pedal. Failure to comply may result in Heavy Equipment Transporter (HET) Tractor/trailer movement and damage to equipment.

#### **NOTE**

- Automatic parking brake valve will apply parking brakes when air system pressure falls to approximately 30 psi (2.1 bar) or less.
  - If HET Tractor is properly coupled to a trailer, PARKING BRAKE control applies and releases trailer parking brakes (if so equipped) together with HET Tractor.
1. Pull out PARKING BRAKE control (1) to apply parking brakes. Parking brake indicator (2) will illuminate (red).

**OPERATE PARKING BRAKE - Continued**

*Figure 1. Operate Parking Brake.*

2. Push in PARKING BRAKE control (1) to release parking brakes. Parking brake indicator (2) will go out.

**END OF TASK**

**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE  
SHUT ENGINE OFF**

---

**INITIAL SETUP:**

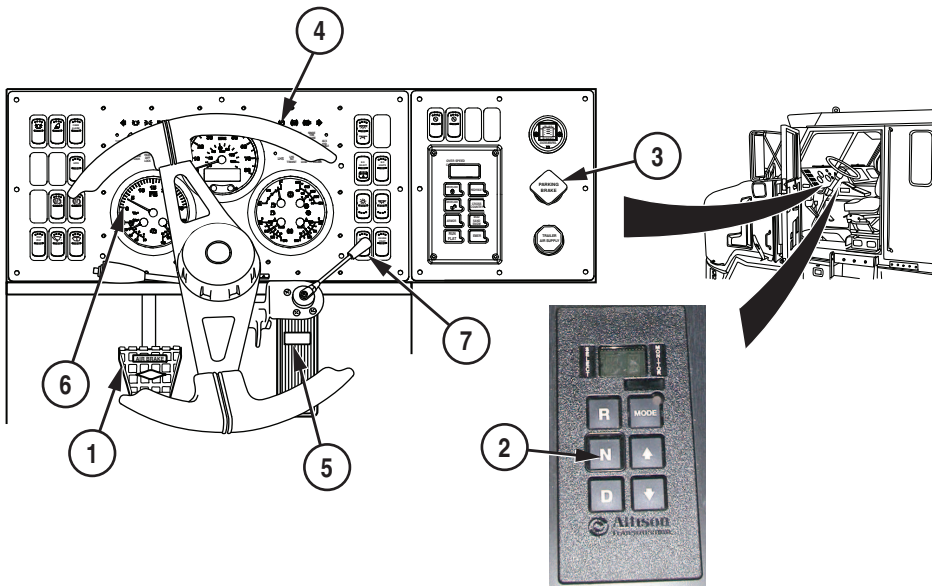
Not Applicable

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**SHUT ENGINE OFF****WARNING**

Do not park Heavy Equipment Transporter (HET) Tractor on a steep grade. If HET Tractor must be parked on a grade, wheels must be chocked. If parked on a paved road, wheels must be turned toward the shoulder if facing down hill and away from the shoulder if facing uphill. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

1. Park Heavy Equipment Transporter (HET) Tractor.
2. Apply service brake pedal (WP 0047) (1).
3. Set transmission range selector (WP 0064) (2) to N (neutral).

**SHUT ENGINE OFF - Continued***Figure 1. Shut Engine Off.*

4. Pull out PARKING BRAKE control (WP 0049) (3) to apply parking brakes. Parking brake indicator (4) will illuminate (red).
5. Release service brake pedal (WP 0047) (1).

**CAUTION**

Before shutting engine off, run engine at reduced speed (800 to 1000 rpm) under no-load conditions for 3 to 5 minutes to allow turbocharger to slow down and cool off. Failure to comply may result in damage to turbocharger.

6. Increase throttle pedal (5) pressure until tachometer (6) indicates 800 to 1000 rpm.
7. Run engine for 3 to 5 minutes.
8. Release throttle pedal (5).
9. Turn off lights (WP 0043) and all electrical accessories.
10. Push IGNITION/ENGINE STOP switch (7) down to ENGINE STOP position.

**SHUT ENGINE OFF - Continued**

11. Install wheel chocks on HET Tractor.

**END OF TASK**

**END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE MAIN INSTRUMENT PANEL OPERATION

---

### INITIAL SETUP:

Not Applicable

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### GENERAL

The Heavy Equipment Transporter (HET) Tractor main instrument panel incorporates electronic gauges, advisory and warning indicator lights, and liquid crystal display (LCD) to communicate information to operator. LCD has multiple modes and functions.

LCD displays odometer reading, battery voltage information, trip odometer, and can be used to test main instrument panel gauges and indicators. LCD can be set to display measured units in English or Metric.

### MAIN INSTRUMENT PANEL MODES

#### Sleep Mode:

Main instrument panel is normally in sleep mode when IGNITION/ENGINE STOP switch (1) is in ENGINE STOP position. Main instrument panel gauges, indicator lights, and LCD screen (2) will not operate in this mode.

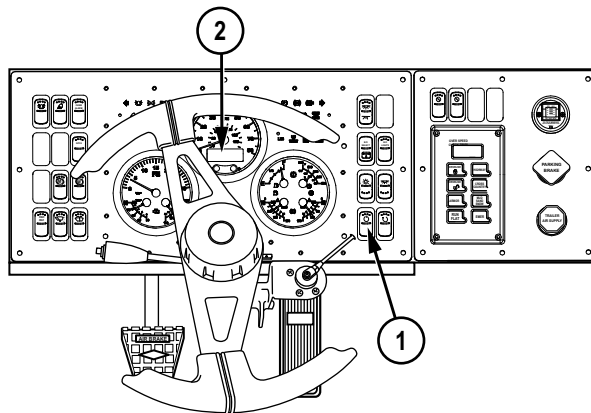
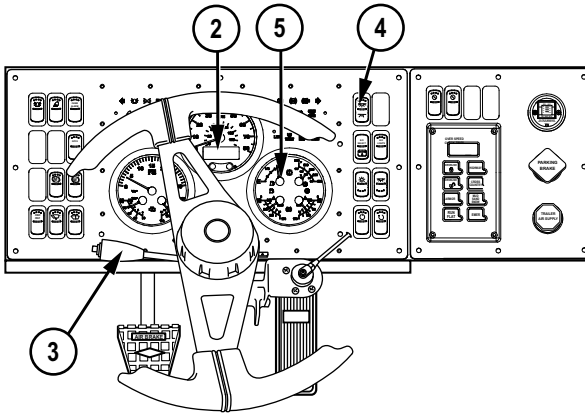


Figure 1. Sleep Mode.

**Limited Mode:**

Actuating the turn signal lever (3) or panel dimmer switch (4) initiates main instrument panel limited mode. In limited mode, turn signals, odometer on LCD (2), and fuel gauge (5) are active. Remaining gauges remain at zero and indicators do not illuminate.

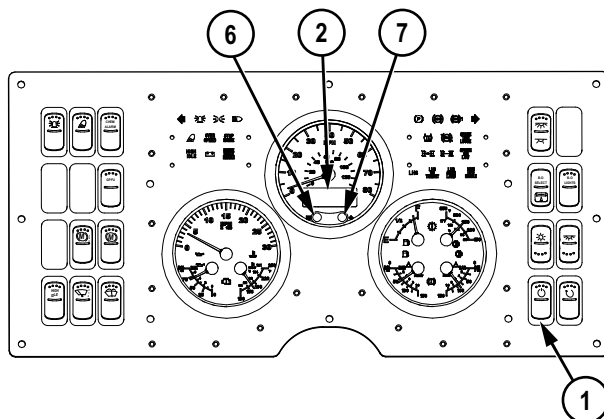


*Figure 2. Limited Mode.*

**Start-up Mode:**

When IGNITION/ENGINE STOP switch (1) is pushed up to IGNITION position, main instrument panel enters start-up mode. After ignition-on, an optional gauge Start-up Self Test (SST) is available. Enable or disable SST by pushing and holding both M (Mode) button (6) and T (Trip) button (7) while pressing IGNITION/ENGINE STOP switch (1) up to IGNITION position. LCD (2) displays a screen that allows enabling (YES) or disabling (NO) of SST.



**Start-up Mode: - Continued***Figure 3. Start-up Mode.*

During start-up mode with SST disabled:

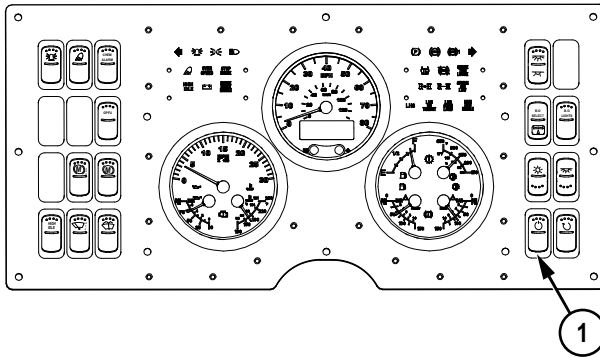
- Gauges go to zero and move to current status positions.
- LCD (2) displays any warning messages, odometer, trip odometer, engine hour meter, and battery voltage readings. LCD (2) then reverts to normal drive mode screen.
- There is no alarm at start-up.

During start-up mode with SST enabled:

- Gauges move upscale, pause at half scale, move to full scale, go to zero, and then move to current status positions.
- LCD (2) turns on and off, displays the OSHKOSH logo and software information, and finally displays normal drive mode screen.
- Indicator lights illuminate and go out, and any active indicator lights illuminate again.
- A one-second alarm sounds at start-up.

**Ignition Mode:**

Main instrument panel goes to ignition mode whenever IGNITION/ENGINE STOP switch (1) is pushed up to IGNITION position. Main instrument panel is fully activated in this mode.

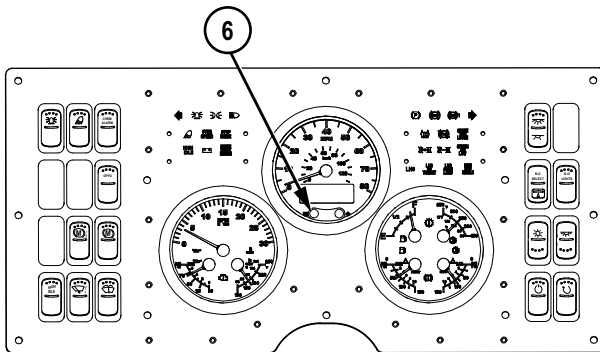
**Ignition Mode: - Continued**

*Figure 4. Ignition Mode.*

**Diagnostic Mode:**

From ignition mode, with HET Tractor stopped, press and hold M button (6) for more than two seconds to place main instrument panel in diagnostic mode. Diagnostic mode provides menus that allow the operator to:

- Set units.
- Adjust contrast.
- Perform instrument diagnostics.



*Figure 5. Diagnostic Mode.*

## LCD MESSAGE CENTER

### NOTE

LCD displays warnings as dictated by various control systems on HET Tractor. Warnings remain on screen until warning is no longer valid or until operator pushes T (trip) button.

### Drive Mode Screen:

This display is normally seen when operating HET Tractor. In drive mode, LCD (2) displays odometer reading, battery voltage, and either operating hours or trip odometer reading. Press (for less than two seconds) and release M button (6) to toggle between operating hours and trip odometer options.

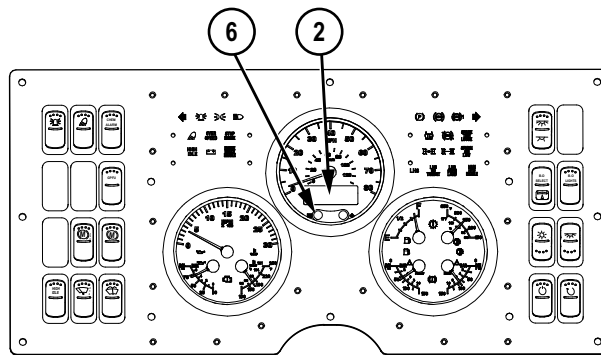


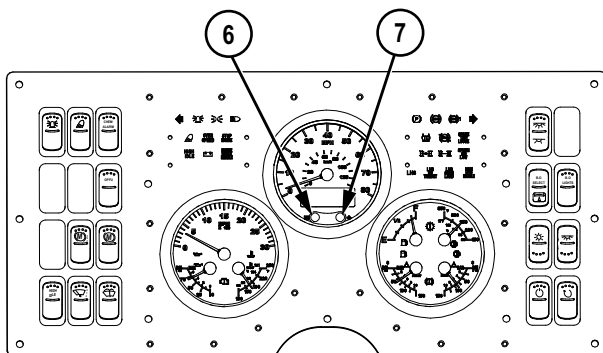
Figure 6. Drive Mode Screen.

### Settings and Diagnostics:

### NOTE

Access the settings and diagnostics menu from drive mode screen with engine running and HET Tractor stopped.

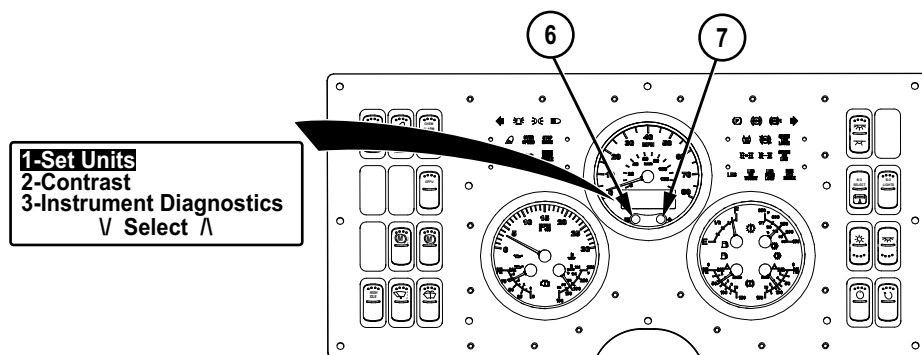
To enter settings and diagnostics menu, press and hold M button (6) for more than two seconds. Item highlighted will be the item selected when both M button (6) and T button (7) are pressed together. Pressing M button (6) or T button (7) separately scrolls through various selections.

**Settings and Diagnostics: - Continued**

*Figure 7. Settings and Diagnostics.*

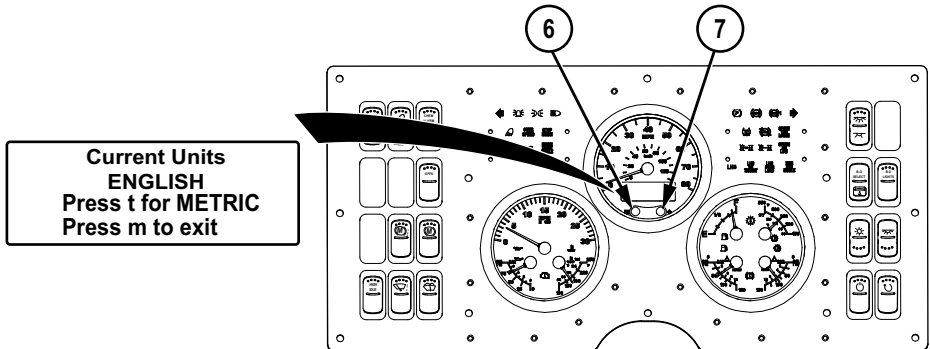
**CHANGING MEASUREMENT UNITS**

1. Enter settings and diagnostics screen.
2. Use M button (6) or T button (7) to scroll through selections until "1 - Set Units" is highlighted.



*Figure 8. Changing Measurement Units.*

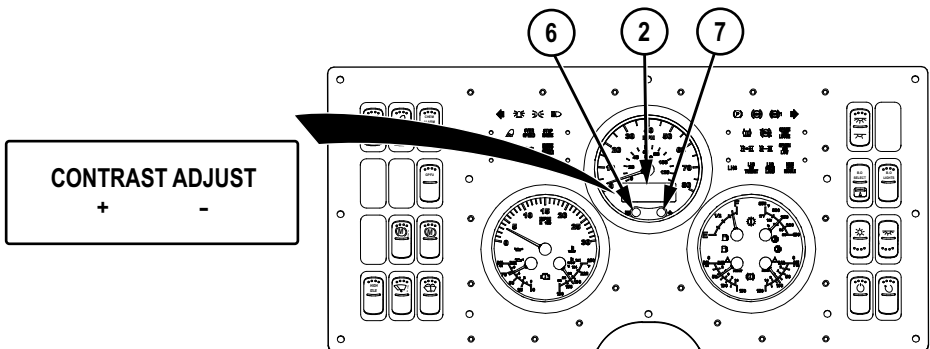
3. Press M button (6) and T button (7) at the same time to select "1 - Set Units".
4. Press T button (7) to change measurement units to English or Metric, as desired.

**CHANGING MEASUREMENT UNITS - Continued***Figure 9. Changing Measurement Units.*

5. Press M button (6) to return to drive mode.

**CHANGING LCD SCREEN CONTRAST SETTING**

1. Enter settings and diagnostics screen.
2. Scroll through selections using M button (6) or T button (7) until "2 - Contrast" is highlighted.

*Figure 10. Changing LCD Screen Contrast Setting.*

3. Press M button (6) and T button (7) at the same time to select "2 - Contrast".
4. Press M button (6) to increase contrast, or press T button (7) to decrease contrast.
5. LCD (2) will automatically return to drive mode.

## MAIN INSTRUMENT PANEL GAUGES TESTING

### NOTE

Main instrument panel LCD is used as part of test procedure. If LCD is unreadable during any part of test, it should be considered defective and main instrument panel replaced.

1. Enter settings and diagnostics screen.
2. Scroll through selections using M button (6) or T button (7) until "3 - Instrument Diagnostics" is highlighted.

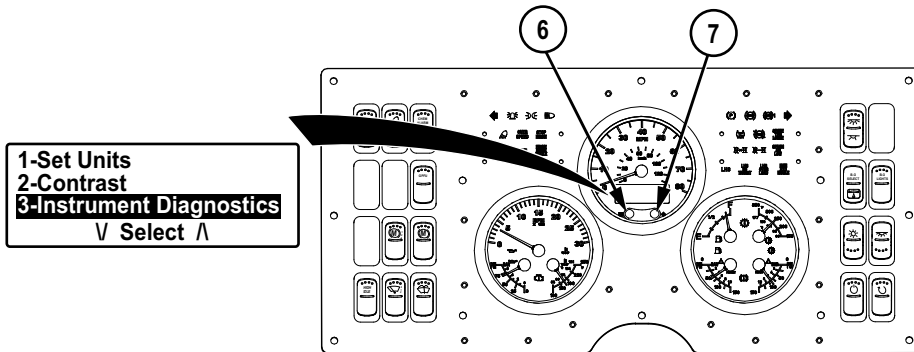


Figure 11. Main Instrument Panel Gauges Testing.

3. Press M button (6) and T button (7) at the same time to display instrument diagnostics menu.
4. Scroll through selections using M button (6) or T button (7) until "1 - Gauge Test" is highlighted.

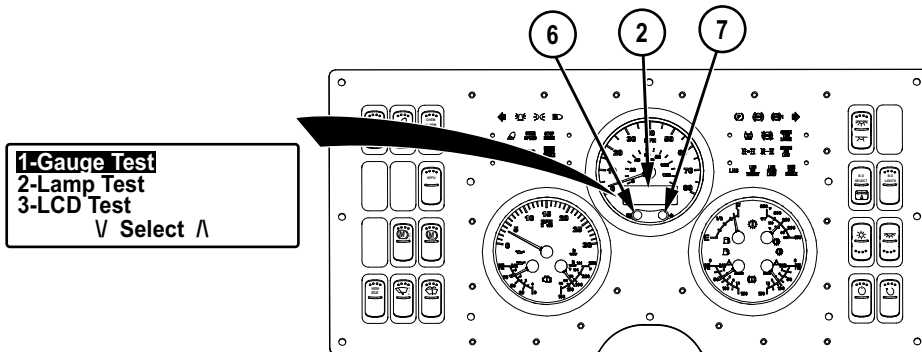
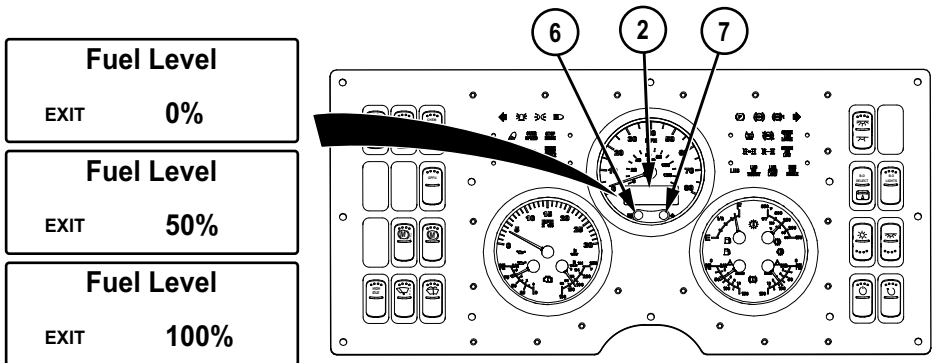


Figure 12. Main Instrument Panel Gauges Testing.

**MAIN INSTRUMENT PANEL GAUGES TESTING - Continued**

5. Press M button (6) and T button (7) together to begin testing gauges (fuel gauge test shown). Each gauge is tested, in turn, at 0%, 50%, and 100%. The LCD (2) displays corresponding percentage.

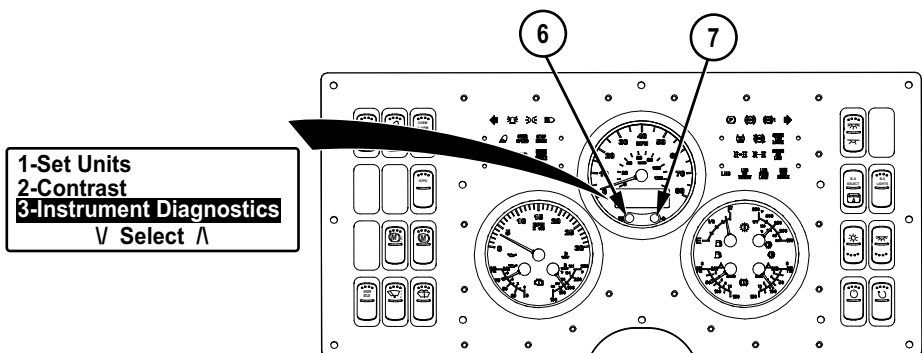


*Figure 13. Main Instrument Panel Gauges Testing.*

6. Press M button (6) to end test and return to drive mode screen.
7. Contact field level maintenance to replace gauge/main instrument panel if corresponding gauge does not reflect LCD (2) percentage indication.

**MAIN INSTRUMENT PANEL INDICATOR LAMPS TESTING**

1. Enter settings and diagnostics screen.
2. Scroll through selections using M button (6) and T button (7) until "3 - Instrument Diagnostics" is highlighted.



*Figure 14. Main Instrument Panel Indicator Lamps Testing.*

**MAIN INSTRUMENT PANEL INDICATOR LAMPS TESTING - Continued**

3. Press M button (6) and T button (7) at the same time to display instrument diagnostics menu.
4. Scroll through selections using M button (6) or T button (7) until "2 - Lamp Test" is highlighted.

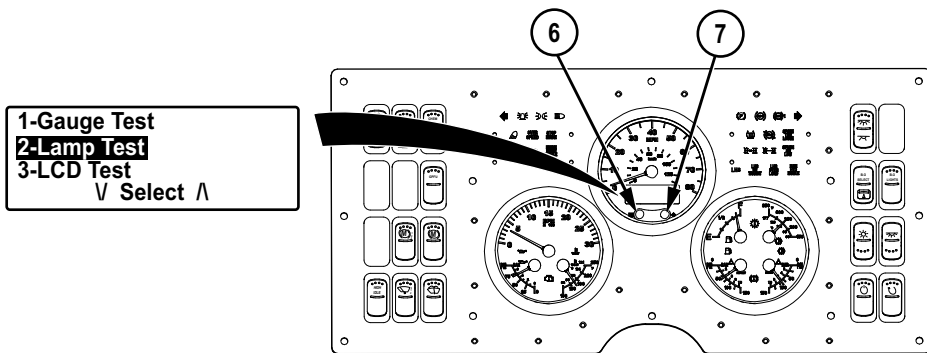


Figure 15. Main Instrument Panel Indicator Lamps Testing.

5. Press M button (6) and T button (7) together to test indicator lamps: each indicator lamp on main instrument panel illuminates and goes out in turn. LCD (2) displays corresponding indicator lamp under test (high beam indicator lamp test shown).

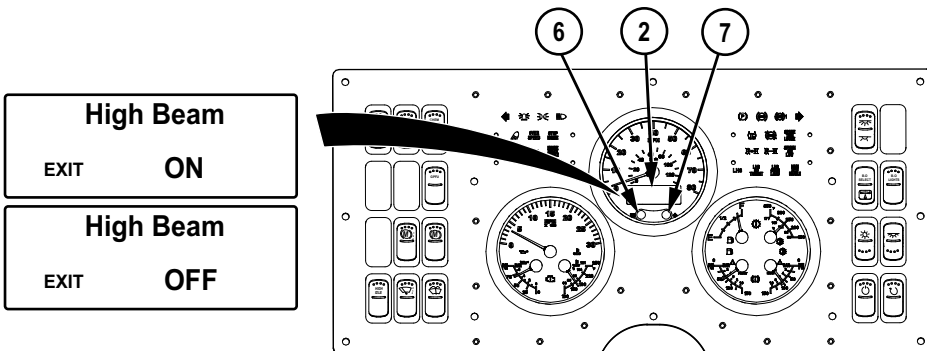


Figure 16. Main Instrument Panel Indicator Lamps Testing.

6. Press M button (6) to end test and return to drive mode screen.
7. Contact field level maintenance if an indicator lamp fails to illuminate as indicated by the LCD (2).



## MAIN INSTRUMENT PANEL LCD TESTING

### NOTE

Main instrument panel LCD is used as part of test procedure. If LCD is unreadable during any part of test, it should be considered defective and main instrument panel replaced.

1. Enter settings and diagnostics screen.
2. Scroll through selections using M button (6) or T button (7) until "2 - Instrument Diagnostics" is highlighted.

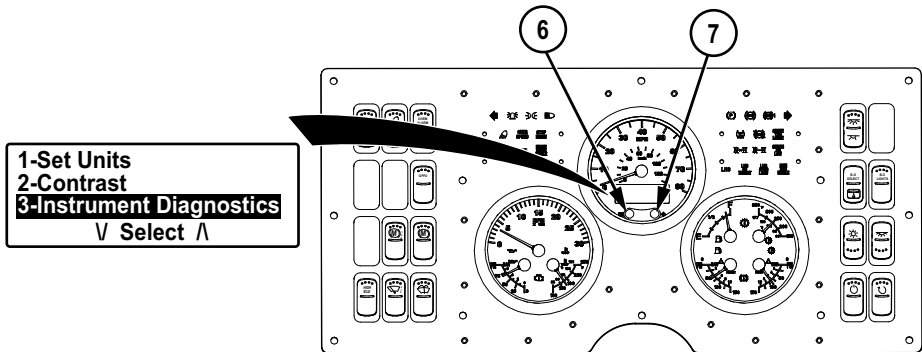


Figure 17. Main Instrument Panel LCD Testing.

3. Press M button (6) and T button (7) at the same time to display instrument diagnostics menu.
4. Scroll through selections using M button (6) or T button (7) until "3 - LCD Test" is highlighted.

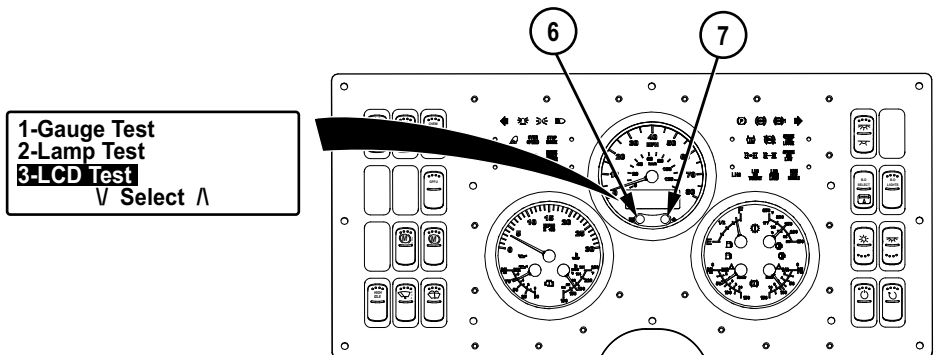
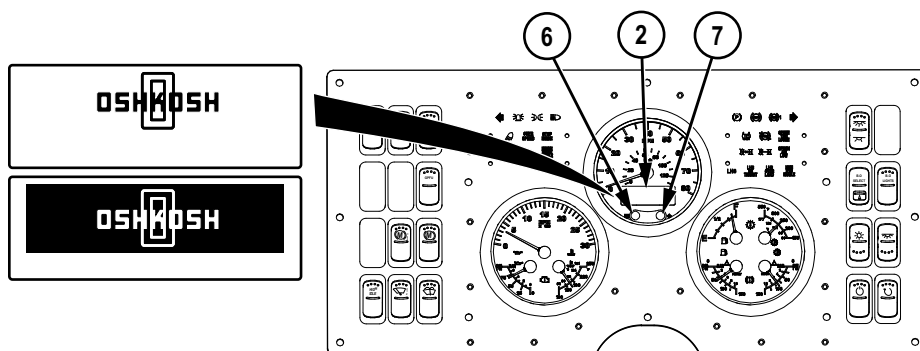


Figure 18. Main Instrument Panel LCD Testing.

**MAIN INSTRUMENT PANEL LCD TESTING - Continued**

5. Press M button (6) and T button (7) together to begin testing LCD (2). The OSHKOSH logo displays in normal and reversed modes three times before returning to drive mode screen.



*Figure 19. Main Instrument Panel LCD Testing.*

6. Contact field level maintenance to replace main instrument panel if LCD (2) fails to illuminate as shown.

**END OF TASK**

**END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE CENTRAL TIRE INFLATION SYSTEM (CTIS) OPERATION

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### INITIAL SETUP:

Not Applicable

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### GENERAL INFORMATION

#### CAUTION

- Do not use CTIS indefinitely to maintain tire pressure in a leaking tire. Failure to comply may result in damage to equipment.
- Do not use compressed air from sources other than the Heavy Equipment Transporter (HET) Tractor air system. Moisture and/or contaminants entering CTIS system will affect reliability. Failure to comply may result in damage to equipment.
- Do not operate HET Tractor if wheel cover is removed from wheel assembly. Failure to comply may result in damage to CTIS wheel valves or air lines.

#### NOTE

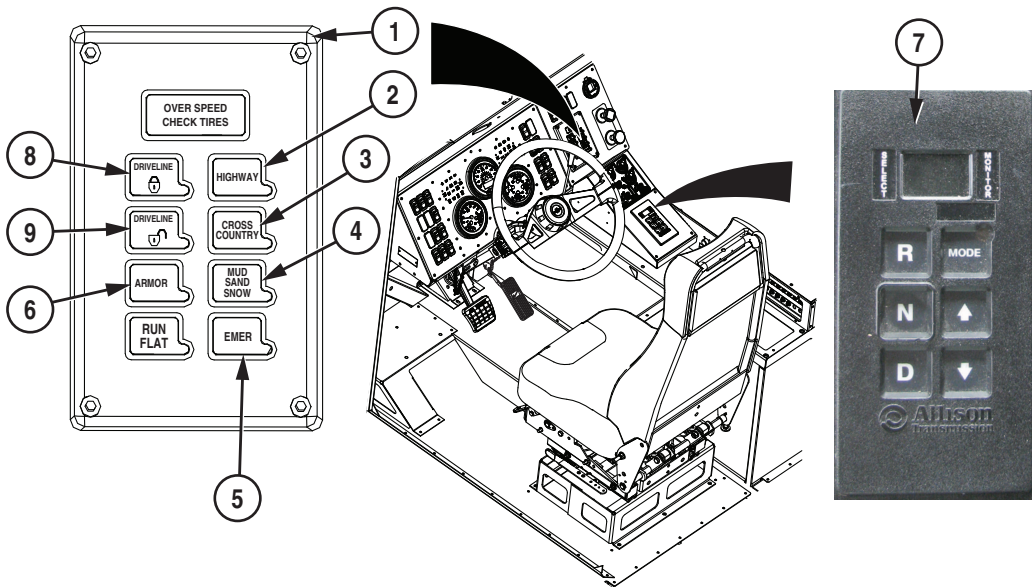
- If CTIS can maintain tire pressure in one or more leaking tires, the mission can be completed before repairs are made.
  - CTIS automatically turns off if HET Tractor air system pressure drops below 85 psi (5.9 bar) to provide priority to HET Tractor air brake system. CTIS operation will automatically resume when air system pressure increases to 112 psi (7.7 bar) or above.
  - During CTIS operation, it is normal to hear air coming out of CTIS wheel valves when inflating or deflating.
  - If a Class III oil leak develops from a CTIS wheel valve, push CTIS on/off switch up to off position and complete the mission. Notify field level maintenance when mission is complete.
1. The CTIS is designed to improve traction under different driving conditions and to maximize mobility without sacrificing tire life. CTIS will automatically adjust air pressure in all tires to correspond to the terrain and cargo settings selected by operators.

**GENERAL INFORMATION - Continued**

2. The CTIS controller (1) has four buttons (with indicator lights incorporated) which allow operators to select the applicable terrain setting:

- HIGHWAY (2)
- CROSS COUNTRY (3)
- MUD SAND SNOW (4)
- EMER (emergency) (5)

Additionally, the CTIS controller (1) ARMOR button (6) allows the operator to select/deselect the armor load setting as applicable.



*Figure 1. Central Tire Inflation System (CTIS) Operation.*

3. Each combination of terrain setting on CTIS controller (1) and gear range selected on transmission range selector (WP 0064) (7) has an automatic axle lockup and/or transfer case lockup mode along with an associated maximum speed limitation. CTIS controller DRIVELINE lock (8) and DRIVELINE unlock (9) buttons allow operators to manually increase or decrease lock levels based on conditions (within limitations of Table 1 below):

**GENERAL INFORMATION - Continued****Table 1. CTIS Driveline Lock Control Levels.**

<b>TERRAIN</b>	<b>STARTING GEAR</b>	<b>AUTOMATIC LOCK LEVEL</b>	<b>MAXIMUM MANUAL LOCK LEVEL</b>	<b>OVERSPEED</b>
HIGHWAY	1 (First Gear Range)	1 (Interaxle Locks)	2 (Interaxle and Transfer Case Locks)	Lock Level 1 = 30 mph (48 km/h) Lock Level 2 = 10 mph (16 km/h)
	Other Gear Range	0 (No Driveline Locks)	2 (Interaxle and Transfer Case Locks)	Lock Level 0 = N/A Lock Level 2 = 10 mph (16 km/h)
CROSS COUNTRY	1 (First Gear Range)	2 (Interaxle and Transfer Case Locks)	3 (Interaxle, Transfer Case, And Intra-Axle Locks)	Lock Level 2 = 10 mph (16 km/h) Lock Level 3 = 10 mph (16 km/h)
	Other Gear Range	0 (No Driveline Locks)	2 (Interaxle and Transfer Case Locks)	Lock Level 0 = N/A Lock Level 3 = 10 mph (16 km/h)
MUD SAND	1 (First Gear Range)	2 (Interaxle and Transfer Case Locks)	3 (Interaxle, Transfer Case, And Intra-Axle Locks)	Lock Level 2 = 10 mph (16 km/h) Lock Level 3 = 10 mph (16 km/h)
	Other Gear Range	2 (Interaxle and Transfer Case Locks)	3 (Interaxle, Transfer Case,	Lock Level 1 = 30 mph (48 km/h)

**GENERAL INFORMATION - Continued****Table 1. CTIS Driveline Lock Control Levels - Continued.**

TERRAIN	STARTING GEAR	AUTOMATIC LOCK LEVEL	MAXIMUM MANUAL LOCK LEVEL	OVERSPEED
SNOW			And Intra-Axle Locks)	Lock Level 2 = 10 mph (16 km/h)
EMER (Emergency)	1 (First Gear Range)	3 (Interaxle, Transfer Case, And Intra-Axle Locks)	N/A	Lock Level 3 = 30 mph (48 km/h)
	Other Gear Range	2 (Interaxle and Transfer Case Locks)	3 (Interaxle, Transfer Case, And Intra-Axle Locks)	Lock Level 2 = 10 mph (16 km/h) Lock Level 3 = 10 mph (16 km/h)

4. CTIS increases tire inflation pressure when HET Tractor speed exceeds the allowable speed for each setting (refer to Table 2 below):
- Driveline lockup level will not change in this automatic inflate mode.
  - When an increase in speed requires tire inflation, maintain a lower speed until the tires are inflated to the correct pressure.

**Table 2. CTIS Tire Pressure and Maximum Allowable Speed.**

Terrain Setting	Maximum Speed	TIRE PRESSURE				Warning Delay	Bump Delay
		No Armor		With Armor			
		Front	Rear	Front	Rear		
HIGH-WAY	55 mph (89 km/h)	100 psi (6.9 bar)	82 psi (5.7 bar)	110 psi (7.8 bar)	85 psi (5.9 bar)	0	N/A
CROSS COUNTRY	30 mph (48 km/h)	81 psi (5.6 bar)	57 psi (3.9 bar)	89 psi (6.1 bar)	59 psi (4.1 bar)	90 sec.	30 sec.

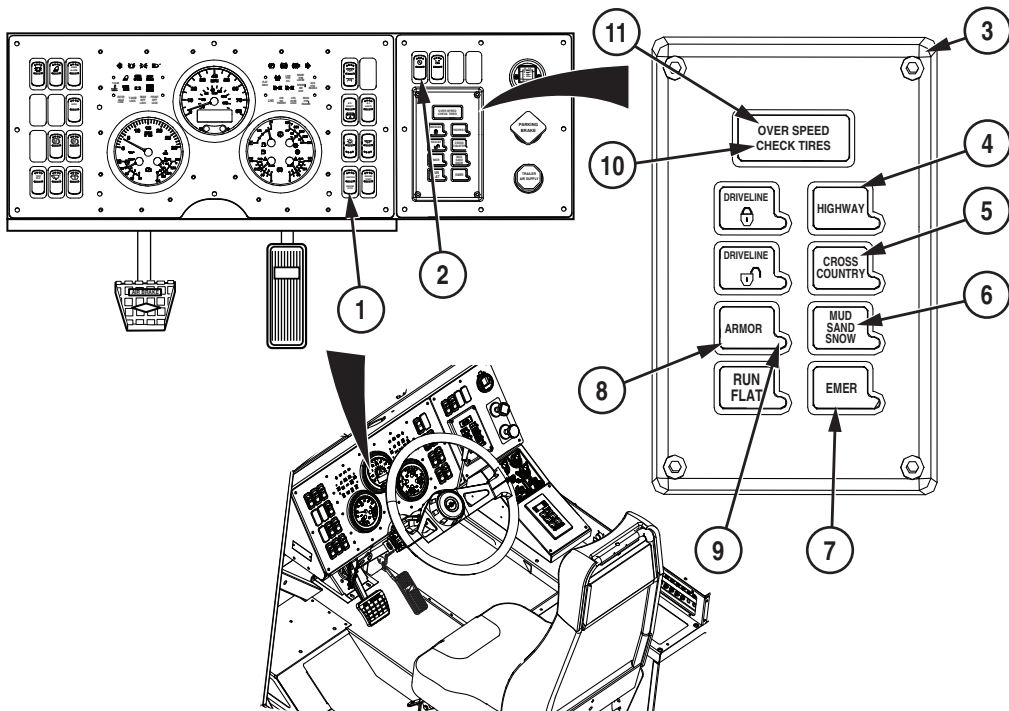
**GENERAL INFORMATION - Continued****Table 2. CTIS Tire Pressure and Maximum Allowable Speed - Continued.**

Terrain Setting	Maximum Speed	TIRE PRESSURE				Warning Delay	Bump Delay
		No Armor		With Armor			
		Front	Rear	Front	Rear		
MUD, SAND, SNOW	15 mph (24 km/h)	44 psi (3.0 bar)	31 psi (2.1 bar)	55 psi (3.8 bar)	32 psi (2.2 bar)	30 sec.	30 sec.
EMER (emergency)	5 mph (8 km/h)	43 psi (2.9 bar)	30 psi (2.1 bar)	39 psi (2.7 bar)	31 psi (2.1 bar)	15 sec.	30 sec.

**END OF TASK****NORMAL CTIS OPERATION****NOTE**

- Set CTIS to appropriate setting before entering an area where poor traction conditions are likely to occur.
- To allow faster inflation time when Heavy Equipment Transporter (HET) Tractor is parked with engine running, set transmission range selector to N (neutral) (WP 0064), apply parking brake (WP 0049), and increase engine speed to approximately 1,200 rpm.
- If CTIS malfunctions, push CTIS on/off switch up to off position, then down to on position. This action will reset CTIS controller and may eliminate the problem.
- If CTIS is disabled, tires must be manually inflated or deflated.
- CTIS controller regulates driveline axle lockup selection as shown in Table 1 and tire pressures as shown in Table 2. CTIS system is operational only when IGNITION/ENGINE STOP switch is in IGNITION position.

1. Push IGNITION/ENGINE STOP switch (1) up to IGNITION position.

**NORMAL CTIS OPERATION - Continued**

*Figure 2. Central Tire Inflation System (CTIS) Operation.*

2. Verify that CTIS on/off switch (2) is in down (on) position.
3. Determine anticipated driving conditions.
4. Start engine (WP 0045).
5. Press and hold appropriate terrain setting button on CTIS controller (3) for approximately one second to activate CTIS:
  - HIGHWAY (4)
  - CROSS COUNTRY (5)
  - MUD SAND SNOW (6)
  - EMER (emergency) (7)

**WARNING**

If Heavy Equipment Transporter (HET) Tractor is equipped with armor, CTIS controller must be set to armor load setting. Failure to comply may result in injury or death to personnel.



**NORMAL CTIS OPERATION - Continued****NOTE**

- ARMOR button must be pressed and held for a full 10 seconds, or armor mode will not engage.
  - When CTIS controller is in armor mode load setting, the indicator will illuminate (green) and remain illuminated as long as CTIS is in armor mode.
6. Select load setting by pressing ARMOR button (8) on CTIS controller (3):
- a. If HET Tractor is armored and ARMOR indicator (9) is not illuminated (green), press the ARMOR button (8) for 10 seconds to enter armor mode.

**NOTE**

- ARMOR button must be pressed and held for approximately 15 seconds, or armor mode will not disengage.
  - Whenever armor mode is changed, select a lower pressure terrain setting (CROSS COUNTRY or MUD SAND SNOW) for 30 to 60 seconds prior to selecting the desired operating terrain setting. This starts a short deflation period that overrides the CTIS controller's pressure buildup allowance. After this period, the desired terrain setting can be selected.
- b. If HET Tractor is not armored and ARMOR indicator (9) is illuminated (green), press ARMOR button (8) for approximately 15 seconds to disable armor mode. ARMOR indicator (9) will go out.

**NOTE**

Allow time for CTIS adjustment. Terrain setting and ARMOR indicators on CTIS controller will flash (green) to indicate CTIS is checking/adjusting tire pressures and driveline lockups. Chosen terrain setting/ARMOR indicators will illuminate continuous (green) when tire pressures and driveline lockups are properly set.

7. Monitor CTIS controller during HET Tractor operation:
- A flashing green terrain/load setting indicator indicates CTIS is checking/adjusting tire pressures.
  - A continuous green terrain/load setting indicator indicates CTIS and driveline lockup are operating properly and CTIS pressure check/adjustment cycle has been completed.
  - A flashing (amber) CHECK TIRES indicator (10) indicates CTIS has detected a moderate to large air leak in one or more tires (refer to CTIS CHECK TIRES indicator flashing (amber) procedures within this work package).
  - A flashing (amber) OVERSPEED indicator (11) indicates HET Tractor has exceeded CTIS terrain setting maximum speed for one minute (refer to CTIS

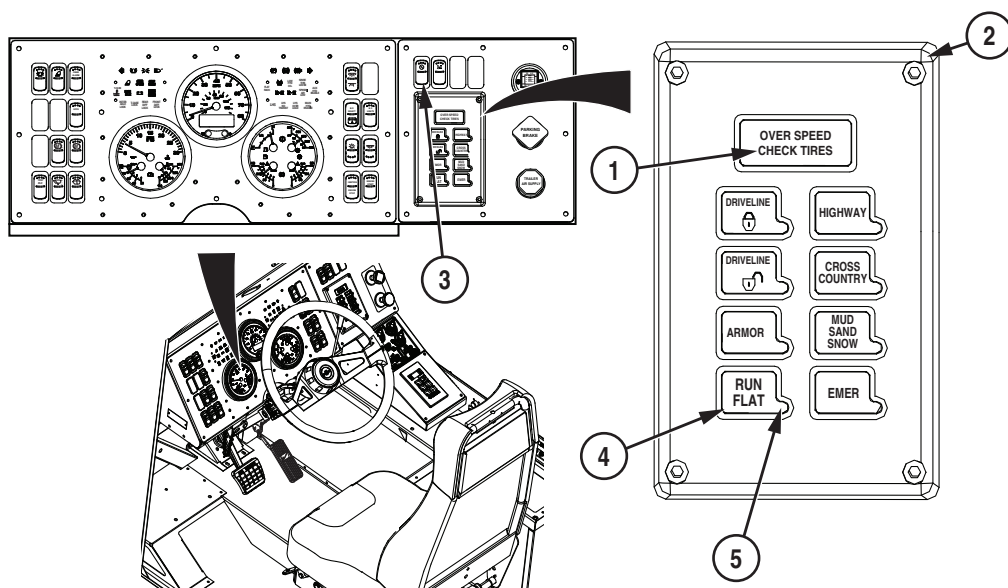
**NORMAL CTIS OPERATION - Continued**

OVERSPEED indicator flashing (amber) procedures within this work package).

**END OF TASK****CTIS CHECK TIRES INDICATOR FLASHING (AMBER)****NOTE**

- The CTIS automatically checks for moderate to large leaks or air loss to guard against all tires losing pressure when one has a large leak and CTIS is operating.
- If CTIS is disabled, tires must be manually inflated or deflated.

A flashing (amber) CHECK TIRES indicator (1) on the CTIS Controller (2) indicates CTIS has detected a moderate to large air leak in one or more tires:



*Figure 3. Central Tire Inflation System (CTIS) Operation.*

- Push CTIS on/off switch (3) up to off position.
- Stop HET Tractor.
- Check all tires and CTIS components (WP 0012) for air leaks.

**CTIS CHECK TIRES INDICATOR FLASHING (AMBER) - Continued**

- d. Press CTIS on/off switch (3) down to on position.
- e. Press CTIS RUN FLAT button (4) on CTIS Controller (2). RUN FLAT indicator (5) will illuminate (green).
- f. Allow HET Tractor to run for several minutes to build up air pressure and check if CTIS is maintaining pressure in all tires.
- g. If CTIS RUN FLAT mode cannot maintain air pressure, complete one of the following (listed in order of preference):
  - Repair the leak (if possible).
  - Change damaged tire (WP 0126).
  - Push CTIS on/off switch (3) down to off position and limp HET Tractor home.

**END OF TASK****CTIS OVERSPEED INDICATOR FLASHING (AMBER)****CAUTION**

- When HET Tractor speed exceeds a terrain setting's allowed speed for more than one minute, CTIS increases tire inflation pressure, but does not change driveline lock level. When an increase in speed is required, use CTIS Controller buttons to change terrain setting to change tire pressures and driveline lock level. Maintain lower speed until tires are inflated to correct pressure. Failure to comply may result in damage to equipment.
- Do not change CTIS setting while turning a corner or wheels are slipping. Damage to driveline may result.

**NOTE**

- If HET Tractor is stopped during a CTIS selection change, an increase in engine rpm may be required to provide adequate air supply.
- If HET Tractor exceeds CTIS terrain setting maximum speed for one minute (refer to Table 1 and Table 2 of this work package for maximum speeds), the OVERSPEED indicator on CTIS controller will flash (amber) and the next higher terrain setting (HIGHWAY, CROSS COUNTRY, or MUD SAND SNOW) indicator will flash (green).

If OVERSPEED indicator (1) on CTIS controller (2) flashes (amber), perform one of the following operations:

1. Change tire pressure and driveline lock level by selecting the terrain setting button with flashing indicator on CTIS controller (2):
  - HIGHWAY (3)
  - CROSS COUNTRY (4)
  - MUD SAND SNOW (5)

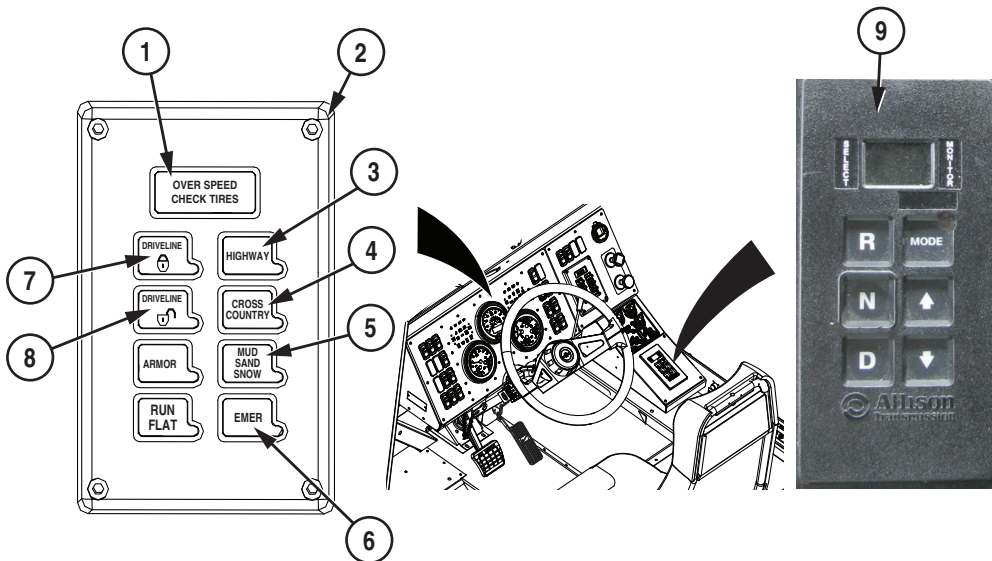


Figure 4. Central Tire Inflation System (CTIS) Operation.

### NOTE

A continuous green terrain setting indicator tells the operator that CTIS terrain setting, HET Tractor speed, and ground conditions are all correctly matched.

2. Reduce HET Tractor speed to below the CTIS terrain setting maximum (refer to Table 1 and Table 2 of this work package for maximum speeds) within 30 seconds and check for continuous (green) indicator on current CTIS controller (2) terrain setting button:
  - HIGHWAY (3)
  - CROSS COUNTRY (4)
  - MUD SAND SNOW (5)
  - EMER (emergency) (6)

### CAUTION

If CTIS controller is currently set to EMER (emergency), Step (3) is not an option. Continue to Step (4). HET Tractor must be stopped and driveline loading relieved. Failure to comply may result in damage to equipment.

## NOTE

- Driveline lockup can be controlled by the operator with the DRIVELINE lock buttons on the CTIS Controller, but the operator cannot select a driveline lockup setting lower than the default setting of the current CTIS terrain setting.
  - If manual driveline lock setting has been selected, changing to a new terrain setting will revert to the default driveline lockup for that setting.
  - The CTIS system will not retain a manually set driveline lockup setting after power-down. Upon power-up, the system will revert to the default driveline lockup setting for the terrain setting it is in.
  - The HET Tractor must be stopped when a driveline lock change is selected.
3. Continue at current speed (if safe). The OVERSPEED indicator (1) will continue to flash (amber) along with the indicator light (green) on the next higher terrain setting:
- HIGHWAY (3)
  - CROSS COUNTRY (4)
  - MUD SAND SNOW (5)
- as CTIS inflates tires and reduces the driveline lock level.
- a. Re-engagement of default driveline lock settings will not automatically occur upon slowing, but the operator may use DRIVELINE lock (7) and DRIVELINE unlock (8) buttons to change driveline lock level.
- b. When the new CTIS setting is reached, OVERSPEED indicator (1) will go out and the indicator for the next higher terrain setting (3, 4, or 5) remains illuminated (green).

## CAUTION

- When changing CTIS terrain setting from EMER (emergency) to any other CTIS terrain setting, HET Tractor must be stopped and driveline loading relieved.
  - When CTIS Controller is set to EMER (emergency) position, top speed should not exceed 5 mph (8 km/h) and distance traveled should not exceed 5 miles (8 km). Care must be exercised as steering response is limited due to full driveline lockup. Failure to comply may result in damage to equipment.
4. Perform the following to relieve driveline loading:
- a. Stop HET Tractor.
- b. Set transmission range selector (WP 0064) (9) to N (neutral).
- c. Select new terrain setting on CTIS Controller (2):
- HIGHWAY (3)
  - CROSS COUNTRY (4)

- MUD SAND SNOW (5)

### **NOTE**

- d. Set transmission range selector (WP 0064) (9) to R (reverse).
- e. Back HET Tractor approximately 5 to 10 ft. (1.5 to 3 m).
- f. Stop HET Tractor.
- g. Set transmission range selector (WP 0064) (9) to N (neutral) and then to D (drive). Select gear range as required for conditions (WP 0064).

**END OF TASK**

**END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE WINDSHIELD WIPERS/WASHER OPERATION

---

### INITIAL SETUP:

Not Applicable

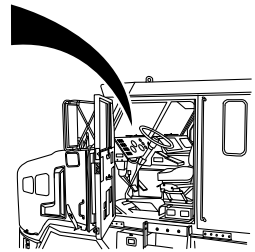
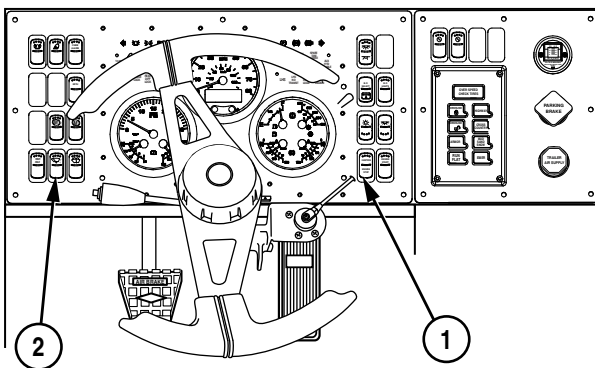
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### WINDSHIELD WIPERS OPERATION

#### NOTE

Battery disconnect switch must be positioned to ON to operate windshield wipers.

1. Push IGNITION/ENGINE STOP switch (1) up to IGNITION position.



*Figure 1. Windshield Wipers Operation.*

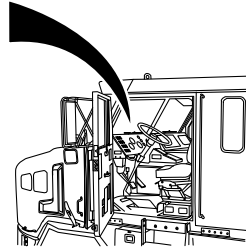
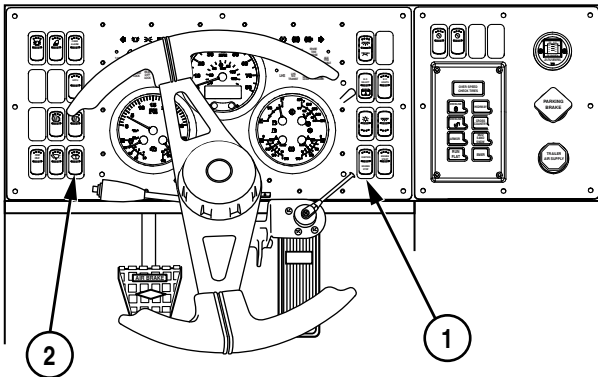
2. Set three-position windshield wiper switch (2) up one position for low speed, or up two positions for high speed (as desired).
3. Set three-position windshield wiper switch (2) to full down position to stop wipers.

### END OF TASK

**WINDSHIELD WASHER OPERATION****NOTE**

Battery disconnect switch must be positioned to ON to operate windshield washer.

1. Push IGNITION/ENGINE STOP switch (1) up to IGNITION position.



*Figure 2. Windshield Washer Operation.*

2. Push up and hold windshield washer switch (2) to spray cleaning fluid on windshield.
3. Release windshield washer switch (2) to stop spray.
4. Operate windshield wipers as needed to clean windshield.

**END OF TASK**

**END OF WORK PACKAGE**



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## **OPERATOR MAINTENANCE CAB TEMPERATURE CONTROLS OPERATION**

---

### **INITIAL SETUP:**

Not Applicable

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### **HEATER OPERATION**

#### **NOTE**

If heater does not blow hot air, ensure heater valves (WP 0132) are open.

Cab air temperature is controlled by position of heater temperature control.

1. Start engine (WP 0045).
2. Position heater temperature control (1) on Heating, Ventilation, and Air Conditioning (HVAC) control panel (2) to desired setting:
  - a. Turn heater temperature control (1) clockwise (CW) to increase temperature.
  - b. Turn heater temperature control (1) counterclockwise (CCW) to decrease temperature.

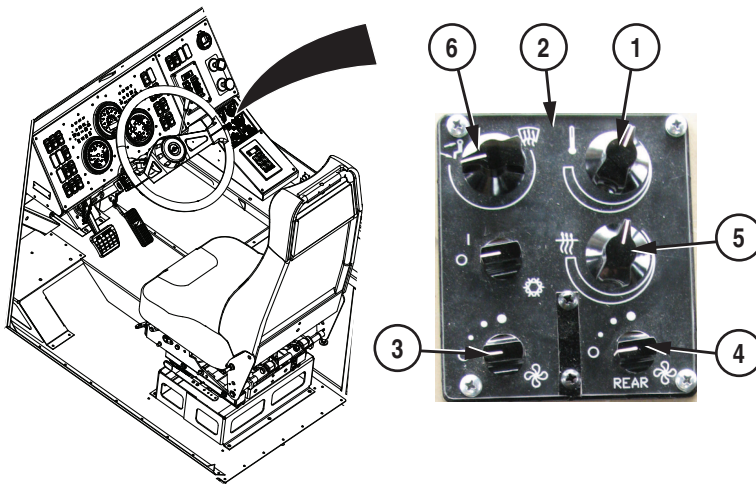


Figure 1. Heater Operation.

3. Set front fan control (3) to desired position:
  - a. Off - full CCW.
  - b. Low - one position CW from off.
  - c. Medium - two positions CW from off.
  - d. High - full CW.
4. Set rear fan control (4) to desired position:
  - a. Off - full CCW.
  - b. Low - one position CW from off.
  - c. Medium - two positions CW from off.
  - d. High - full CW.
5. Position fresh air control (5) as desired to control outside airflow for cab ventilation. Full CCW shuts outside air ventilation off.
6. Position cab/defrost vent control (6) as desired to control airflow direction:
  - a. Turning the cab/defrost vent control (6) to full CCW position turns maximum airflow to defrost vent, and shuts off airflow to cab vents.
  - b. Turning the cab/defrost vent control (6) partially CW divides flow between defrost and cab vents.

- c. Turning the cab/defrost vent control (6) fully CW turns maximum airflow to cab vents and shuts off airflow to defrost vents.
7. When heater is no longer required:
  - a. Position heater temperature control (1) to desired setting.
  - b. Set front and rear fan controls (3 and 4) to off (full CCW).
  - c. Adjust fresh air control (5) and cab/defrost vent control (6) as desired.

## END OF TASK

## WINDSHIELD DEFROST OPERATION

### NOTE

If heater does not blow hot air, ensure heater valves (WP 0132) are open.

1. Start engine (WP 0045).
2. Turn cab/defrost vent control (1) on HVAC control panel (2) to full CCW position.

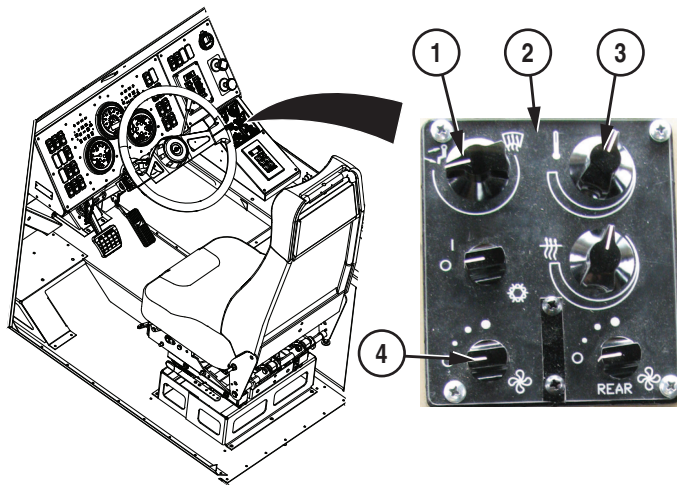


Figure 2. Windshield Defrost Operation.

3. Position heater temperature control (3) to desired setting.
  4. Set front fan control (4) to desired setting:
    - a. Off - full CCW.

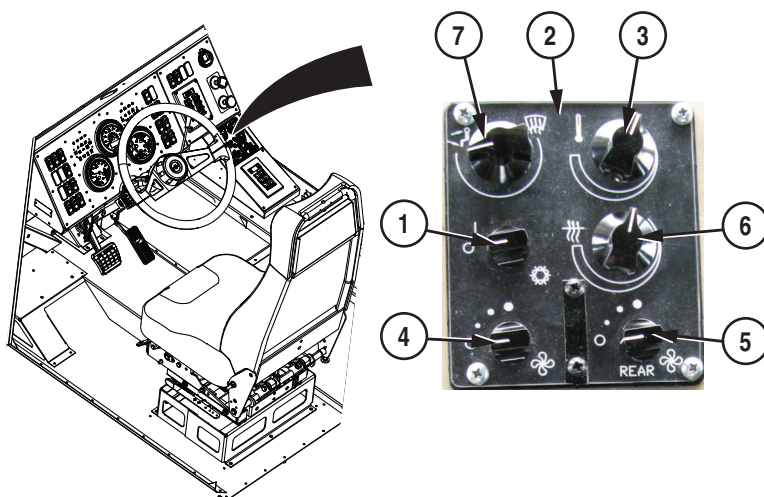
**WINDSHIELD DEFROST OPERATION - Continued**

- b. Low - one position CW from off.
  - c. Medium - two positions CW from off.
  - d. High - full CW.
5. When windshield defrost is no longer required:
- a. Position cab/defrost vent control (1) to desired setting.
  - b. Position heater temperature control (3) to desired setting.
  - c. Set front fan control (4) to off (full CCW).

**END OF TASK****AIR CONDITIONER (A/C) OPERATION****NOTE**

- Close heater valves (WP 0132) to improve the efficiency of cabin air conditioning (A/C).
- Closing the heater valves (WP 0132) disables cabin heat.

1. Start engine (WP 0045).
2. Set A/C control (1) on HVAC control panel (2) to on (full CW).

**AIR CONDITIONER (A/C) OPERATION - Continued**

*Figure 3. Air Conditioner (A/C) Operation.*

**NOTE**

Closing the heater valves (WP 0132) disables heater temperature control.

3. Set heater temperature control (3) to desired setting:
  - a. Turn heater temperature control (3) CCW to decrease temperature.
  - b. Turn heater temperature control (3) CW to increase temperature.
4. Set front fan control (4) to desired setting:
  - a. Off - full CCW.
  - b. Low - one position CW from off.
  - c. Medium - two positions CW from off.
  - d. High - full CW.
5. Set rear fan control (5) to desired setting:
  - a. Off - full CCW.
  - b. Low - one position CW from off.
  - c. Medium - two positions CW from off.
  - d. High - full CW.

**AIR CONDITIONER (A/C) OPERATION - Continued****NOTE**

- Turning fresh air control (WP 0017) full CCW shuts outside air ventilation off.
- Shutting outside air ventilation off will improve the efficiency of cabin air conditioning (A/C).

6. Position fresh air control (6) as desired to control outside airflow for cab ventilation.
7. Position cab/defrost vent control (7) as desired to control airflow direction:
  - a. Turning the cab/defrost vent control (7) to full CCW position turns maximum airflow to defrost vent, and shuts off airflow to cab vents.
  - b. Turning the cab/defrost vent control (7) partially CW divides airflow between defrost and cab vents.
  - c. Turning the cab/defrost vent control (7) fully CW turns maximum airflow to cab vents and shuts off airflow to defrost vents.
8. When A/C is no longer required:
  - a. Set A/C control (1) to off (full CCW).

**NOTE**

Heat will not be available if heater valves (WP 0132) have been closed. If heat is required, open heater valves (WP 0132).

- b. Position heater temperature control (3) to desired setting.
- c. Set front fan control (4) to off (full CCW).
- d. Set rear fan control (5) to off (full CCW).
- e. Adjust fresh air control (6) and cab/defrost vent control (7) as desired.

**END OF TASK****END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE PERSONNEL LADDER OPERATION

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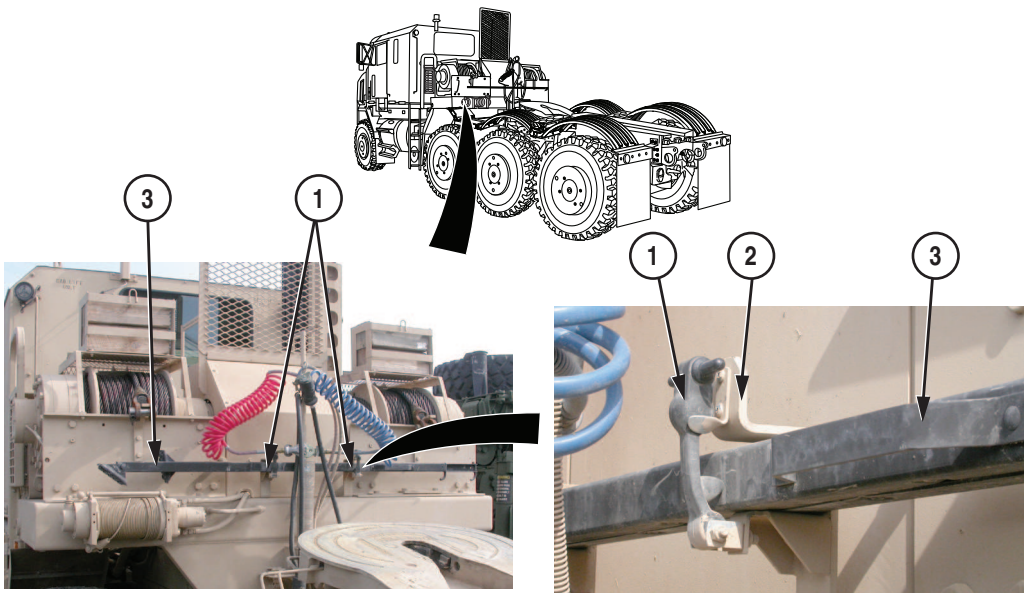
### INITIAL SETUP:

Not Applicable

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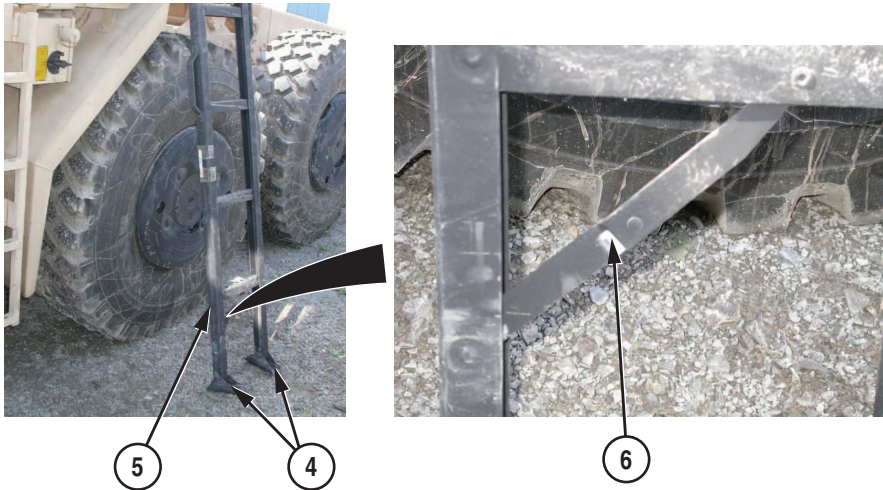
### SETUP LADDER

1. Unstow catwalk ladder. (WP 0037)
2. Unhook two rubber latches (1) from brackets (2) while supporting ladder (3).



*Figure 1. Setup Ladder.*

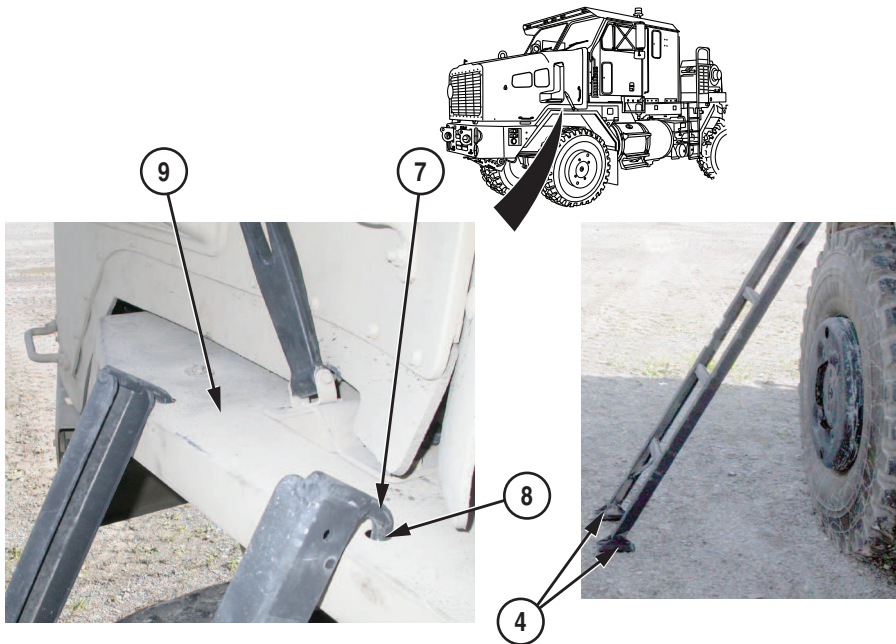
3. Remove ladder (3) from two brackets (2).
4. Set two shoes (4) on hard surface.

**SETUP LADDER - Continued**

*Figure 2. Setup Ladder.*

5. Pull side rail (5) down until lock (6) engages.
6. Place two hooks (7) in holes (8) in fender (9).



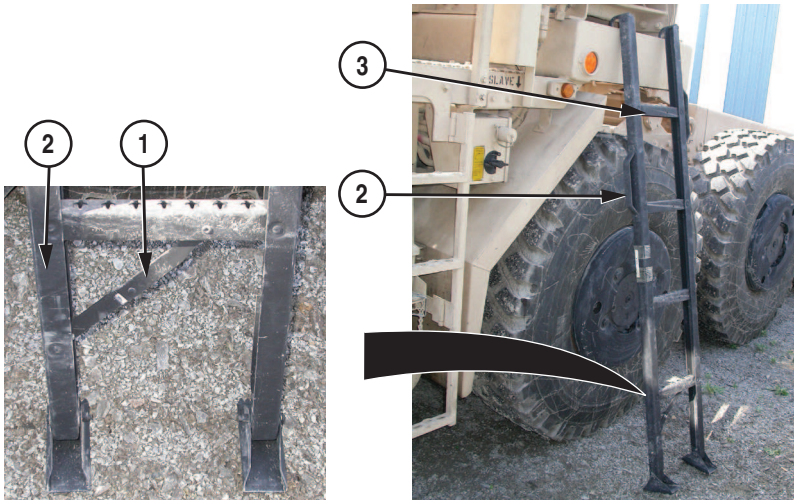
**SETUP LADDER - Continued**

*Figure 3. Setup Ladder.*

7. Position two shoes (4) securely on ground.

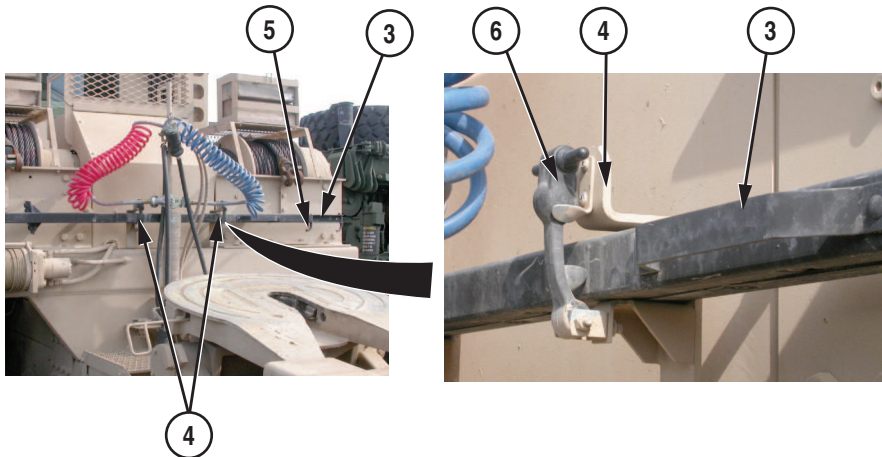
**END OF TASK****STOW LADDER**

1. Push lock (1) up to release and push side rail (2) up to collapse ladder (3).

**STOW LADDER - Continued***Figure 4. Stow Ladder.***NOTE**

Install ladder with hooks pointing downward.

2. Install ladder (3) in two brackets (4) with hooks (5) toward passenger of vehicle.

*Figure 5. Stow Ladder.*

3. While supporting ladder (3), install two rubber latches (6) in brackets (4).

**STOW LADDER - Continued**

4. Stow catwalk ladder.

**END OF TASK****END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE FIRE EXTINGUISHER OPERATION

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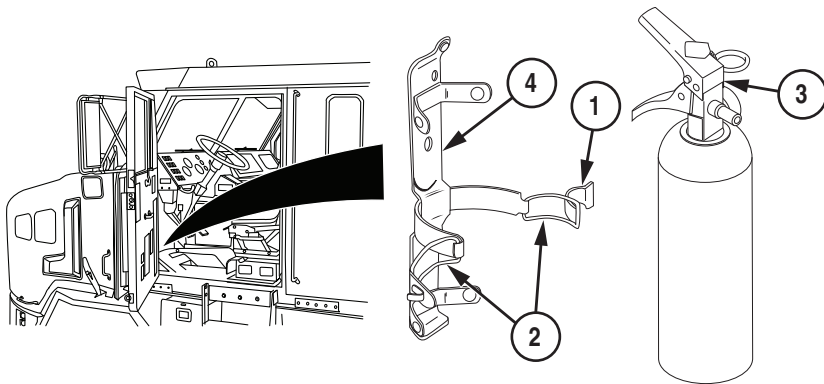
### INITIAL SETUP:

Not Applicable

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### FIRE EXTINGUISHER REMOVAL

1. Pull latch (1) and open straps (2).



*Figure 1. Fire Extinguisher Removal.*

2. Pull fire extinguisher (3) straight out and off bracket (4).

### END OF TASK

### EXTINGUISH FIRE

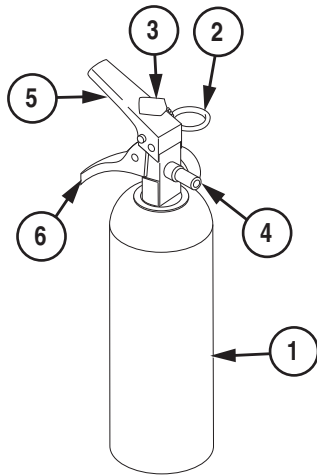
#### NOTE

- Fire extinguisher is a dry chemical type. Refer to MSDS for specific extinguisher warnings and cautions for use.
- Remember the word PASS to operate fire extinguisher:
  - P - Pull safety pin.
  - A - Aim at base of fire nearest you.
  - S - Squeeze handles together.

**EXTINGUISH FIRE - Continued**

- S - Sweep extinguisher back and forth along base of fire.

1. Hold fire extinguisher (1) upright. Pull safety pin (2) to break plastic seal (3).

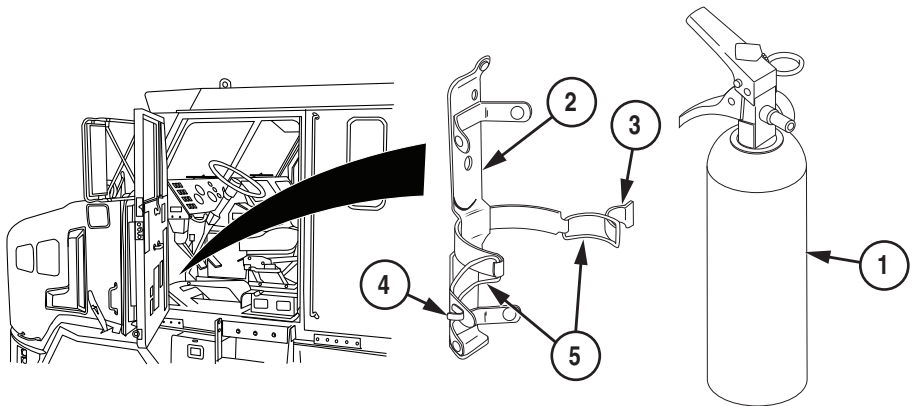


*Figure 2. Extinguish Fire.*

2. Point nozzle (4) at base of fire and stand back 8 ft. (2.44 m).
3. Press operating lever (5) down to fixed lever (6). Spray discharge in a side-to-side motion at base of fire.
4. Release operating lever (5) when fire is out.
5. Notify field level maintenance to replace fire extinguisher (1).

**END OF TASK****FIRE EXTINGUISHER INSTALLATION**

1. Set fire extinguisher (1) in bracket (2).

**FIRE EXTINGUISHER INSTALLATION - Continued**

*Figure 3. Fire Extinguisher Installation.*

2. Position latch (3) in hook (4).
3. Push on latch (3) to secure straps (5).

**END OF TASK**

**END OF WORK PACKAGE**





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## OPERATOR MAINTENANCE TRAILER CONNECTION/DISCONNECTION (FIFTH WHEEL)

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### INITIAL SETUP:

#### Personnel Required

Operator and Assistant - - - (2)

#### References

TM 9-2330-381-14 (WP 0136)

TC 21-305-20 (WP 0136)

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### TRAILER CONNECTION TO HET TRACTOR

#### CAUTION

Lockouts must be positioned as identified in Table 1. Failure to comply may result in damage to equipment.

#### NOTE

- Heavy Equipment Transporter (HET) Tractor is equipped with fifth wheel to accept 3.5 in. (89 mm) kingpin.
  - Remove lockout assembly only if desired locking position (HALF LOCK or FULL LOCK) is not located to the inside (against the fifth wheel). To remove lockout assembly, complete Step (2).
  - Loosen and rotate locking if NO LOCK position is desired, or if desired locking position (HALF LOCK or FULL LOCK) is located to the inside (against the fifth wheel). To loosen and rotate lockout assembly, complete Step (3).
1. Refer to Table 1 to determine whether lockout assembly lockrings are in correct position:

TRAILER CONNECTION TO HET TRACTOR - Continued

Table 1. Lockout Positions.

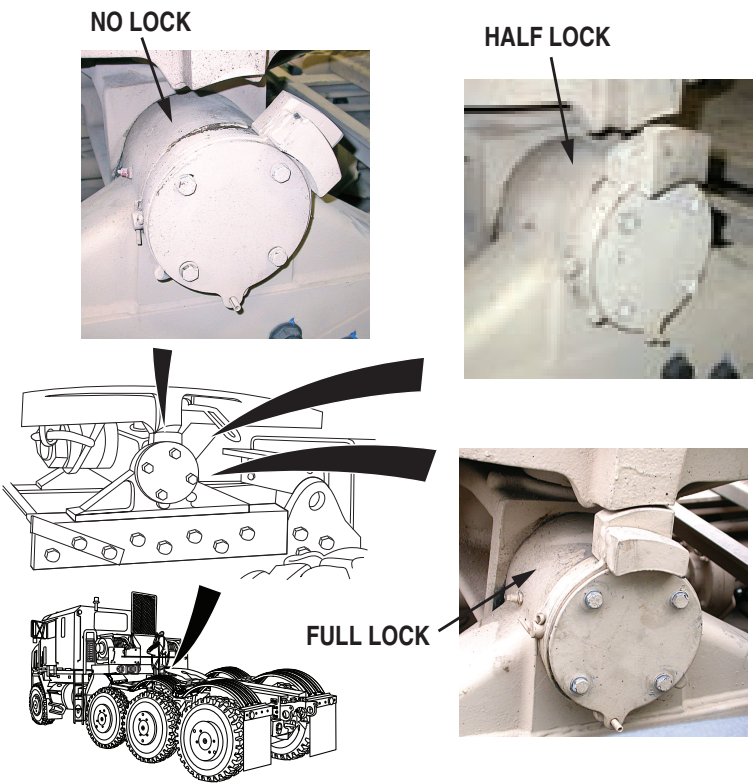


Figure 1. Locking Positions.

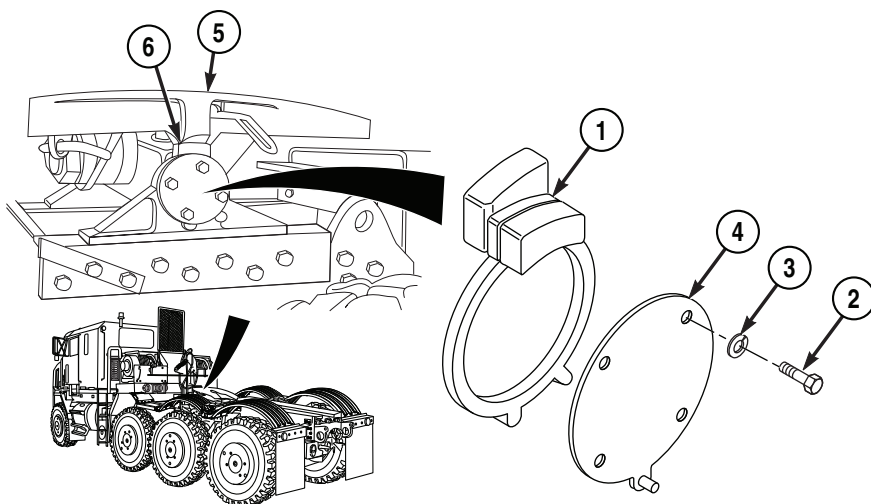
TRAILER TYPE	ON-ROAD	OFF-ROAD
MI000 Trailer	NO LOCK	NO LOCK
Other trailers with combined center of gravity of trailer and payload BELOW 65 in. (165.1 cm)	HALF LOCK	NO LOCK
Other trailers with combined center of gravity of trailer and payload ABOVE 65 in. (165.1 cm)	FULL LOCK	NO LOCK

**TRAILER CONNECTION TO HET TRACTOR - Continued**

- a. If locking is in correct position from trailer/terrain, skip to Step (4).
- b. If desired locking position (HALF LOCK or FULL LOCK) is NOT located to the inside (against the fifth wheel), complete Step (2).
- c. If desired locking position (HALF LOCK or FULL LOCK) is located to the inside (against the fifth wheel), skip to Step (3).

**NOTE**

- Driver side and passenger side lockout assemblies are removed the same way. Driver side shown.
  - Note orientation of cover plate pin and locking tabs before removal to ensure proper reassembly.
2. Remove fifth wheel lockout assembly and orient locking (1) to proper position:



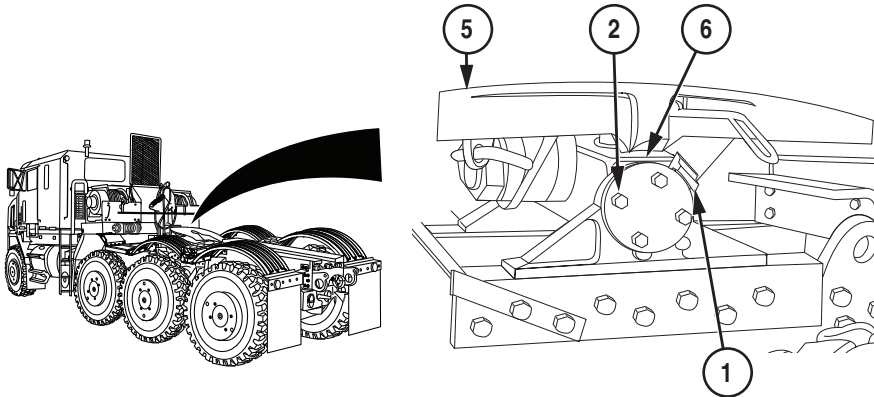
*Figure 2. Fifth Wheel Adjustment.*

- a. Turn four screws (2) counterclockwise and remove screws (2), lockwashers (3), cover plate (4), and locking (1) from fifth wheel (5).
- b. Install locking (1) so desired surface area (see Table 1 above) is oriented directly under engagement area (6) of fifth wheel (5) with cover plate (4), four lockwashers (3) and screws (2). Turn screws (2) clockwise to tighten.
- c. Repeat Step (2) for opposite side of fifth wheel (5).

**TRAILER CONNECTION TO HET TRACTOR - Continued****NOTE**

Driver side and passenger side lockout assemblies are loosened the same way. Driver side shown.

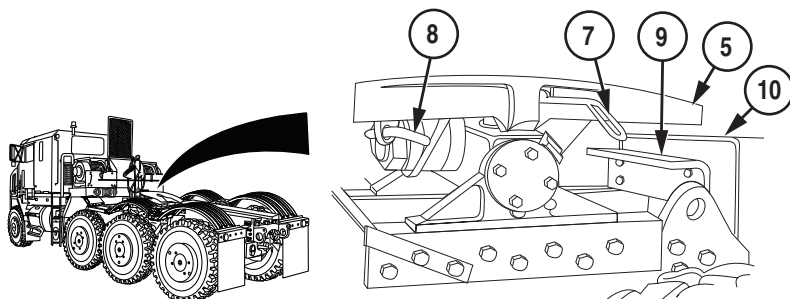
3. Loosen fifth wheel lockout assembly and orient locking (1) to proper position:
  - a. Turn four screws (2) counterclockwise to loosen.



*Figure 3. Fifth Wheel Adjustment.*

**NOTE**

- Driver side locking rotates toward the rear of vehicle.
  - Passenger side locking rotates toward the front of vehicle.
- b. Rotate locking (1) so desired surface area (see Table 1 above) is oriented directly under engagement area (6) of fifth wheel (5).
  - c. Turn four screws (2) clockwise to tighten.
  - d. Repeat Step (3) for opposite side of fifth wheel (5).
4. Pull fifth wheel secondary lock release handle (7) completely out and latch in out position.

**TRAILER CONNECTION TO HET TRACTOR - Continued**

*Figure 4. Trailer Connection To HET Tractor.*

5. Pull fifth wheel primary lock release handle (8) completely out and latch in out position.
6. Push down rear of fifth wheel (5) until it rests on stop (9) and below guide ramps (10).

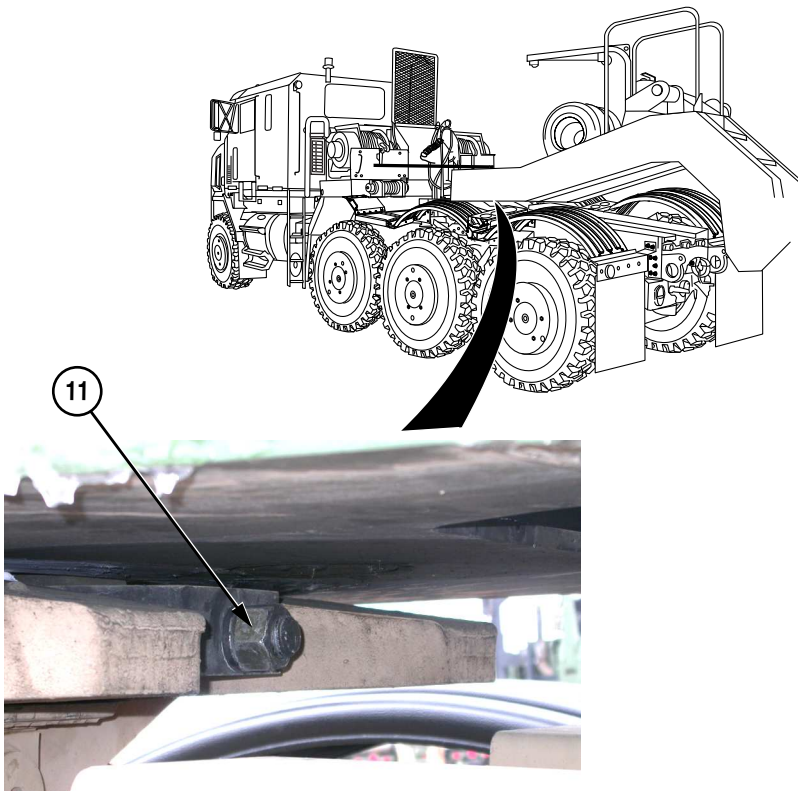
**CAUTION**

- Ensure there is a generous amount of grease on fifth wheel, ramps, king pin, and steering wedge. Insufficient lubrication may result in damage to equipment.
  - HET Tractor and trailer coupling should be done with the HET Tractor and trailer straight in line, not at an angle. If trailer steering wedge is not aligned with fifth wheel, operate HET Tractor to align them. Failure to comply may result in damage to fifth wheel or trailer steering wedge.
7. Prepare trailer for coupling per TM 9-2330-381-14.

**NOTE**

Loosening steering wedge adjusting nut ensures steering wedge can be properly fitted and tightened after king pin is locked in fifth wheel.

8. Turn steering wedge adjusting nut (11) three full turns counterclockwise (refer to TM 9-2330-381-14).

**TRAILER CONNECTION TO HET TRACTOR - Continued**

*Figure 5. Trailer Connection To HET Tractor.*

9. Start engine (WP 0045).

**WARNING**

The position of assistant must be known at all times. Be careful no one is standing directly behind tractor or trailer or under trailer neck during coupling procedure. Failure to comply may result in serious injury or death to personnel.

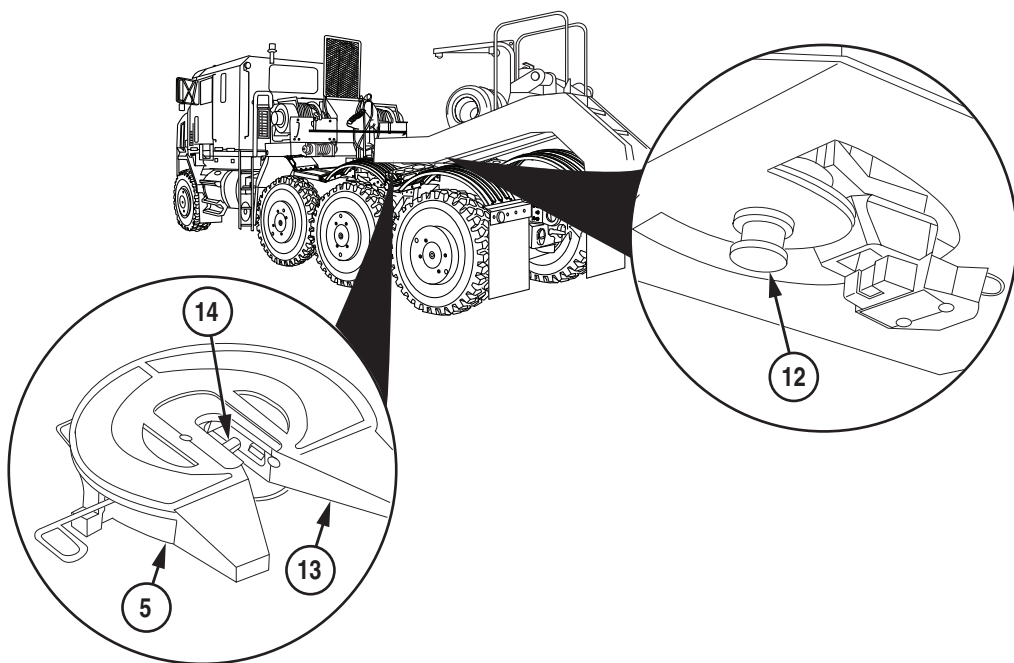
**CAUTION**

- Do not allow king pin to miss and overrun fifth wheel. Ensure trailer gooseneck is high enough to clear the rear of the ramps. Failure to comply may result in damage to equipment.
- Do not allow king pin to run up fifth wheel ramps. Severe damage to HET Tractor and trailer may result.

**TRAILER CONNECTION TO HET TRACTOR - Continued****NOTE**

If trailer is too low to slide up on ramps, raise gooseneck on trailer in accordance with TM 9-2330-381-14.

10. Instruct assistant to provide hand signals on left side of trailer.
11. With assistant providing hand signals on left side of trailer per TC 21-305-20, slowly back HET Tractor under trailer to align king pin (12) with throat (13) of fifth wheel (5).



*Figure 6. Trailer Connection To HET Tractor.*

12. Continue backing slowly until fifth wheel jaws (14) lock around king pin (12) on trailer.

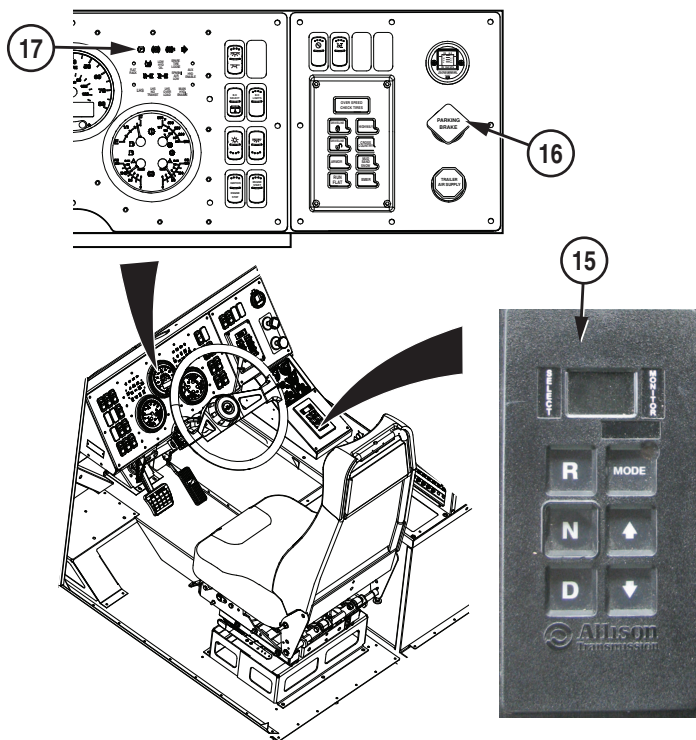
**NOTE**

When king pin is properly locked in fifth wheel, light should not show between top of fifth wheel plate and bottom of trailer.

13. Move HET Tractor forward slightly to check coupling and rock tractor back and forth until king pin (12) is locked in fifth wheel (5).

**TRAILER CONNECTION TO HET TRACTOR - Continued**

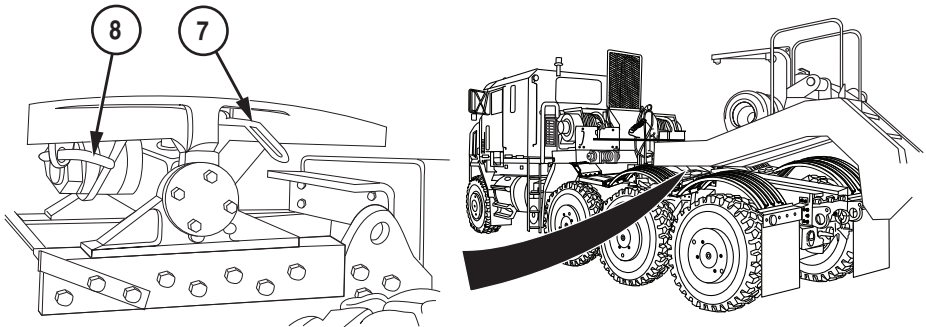
14. When king pin (12) is locked in fifth wheel jaws (14):
- Set transmission range selector (WP 0064) (15) to N (neutral).



*Figure 7. Trailer Connection To HET Tractor.*

- Pull out PARKING BRAKE control (WP 0049) (16) to apply parking brakes. Parking brake indicator (17) will illuminate (red).
15. Check that primary lock release handle (8) and secondary lock release handle (7) are in locked position.



**TRAILER CONNECTION TO HET TRACTOR - Continued**

*Figure 8. Trailer Connection To HET Tractor.*

**WARNING**

Personnel must be clear of steering wedge while cycling back and forth. Failure to comply may result in serious injury or death to personnel.

**NOTE**

The 7-pin, 12-volt trailer light cable may be used in the appropriate connectors if the 12-pin, 24-volt intervehicular cable is damaged or missing.

16. Remove intervehicular wiring harness (18) from stowage box (19).

## TRAILER CONNECTION TO HET TRACTOR - Continued

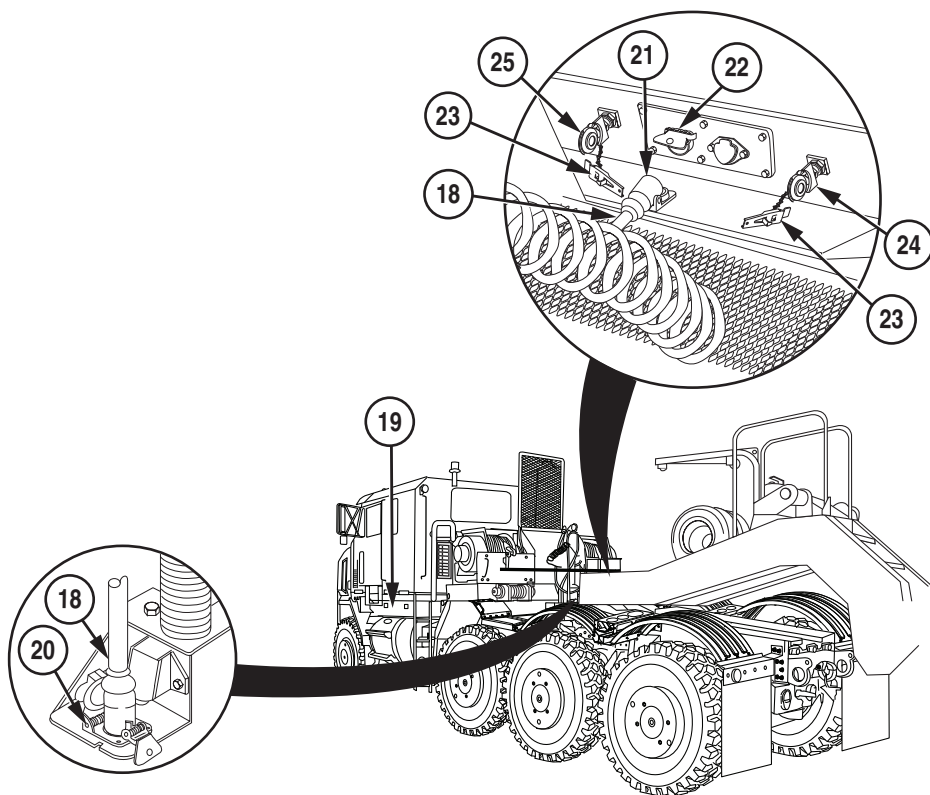
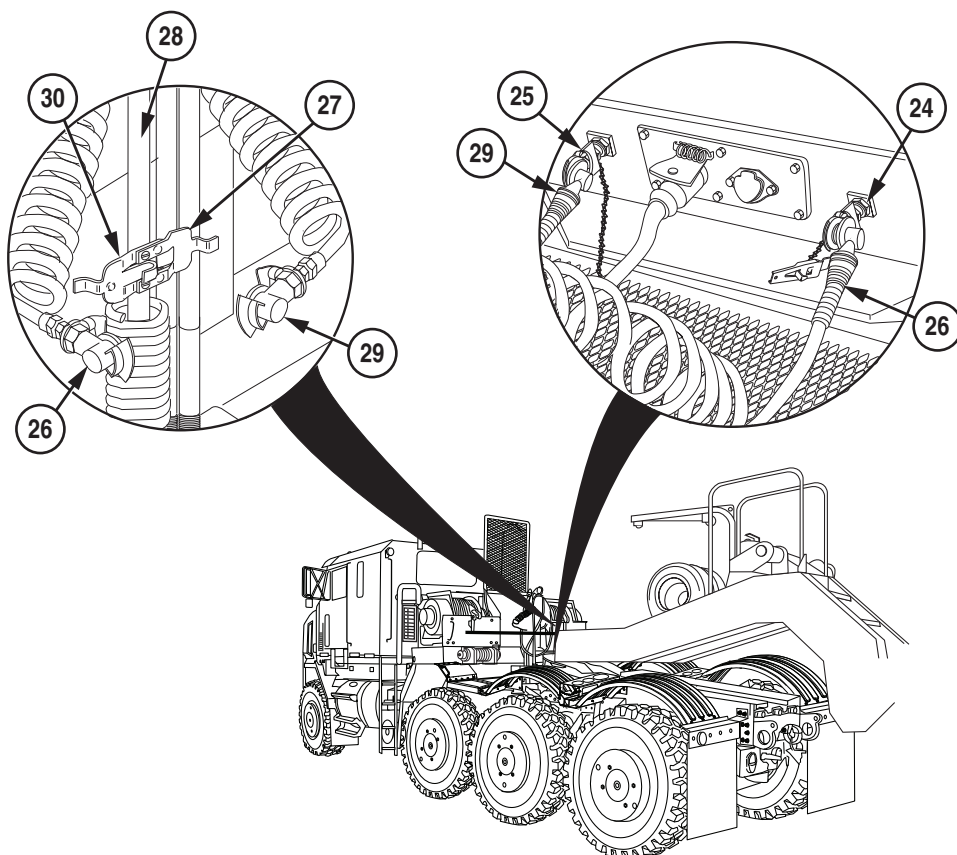


Figure 9. Trailer Connection To HET Tractor.

**NOTE**

Ensure connector is locked in position. Receptacle cover locks wiring harness connector in position when fully seated. If connector is not fully seated, intermittent operation of trailer lights could occur.

17. Install intervehicular wiring harness (18) in HET Tractor receptacle (20).
18. Connect cable plug (21) of intervehicular wiring harness (18) to trailer receptacle (22).
19. Remove dummy couplings (23) from EMERGENCY coupling (24) and SERVICE coupling (25) on trailer.
20. Disconnect red air line (26) from dummy coupling (27) on pogo stick (28) and connect to EMERGENCY coupling (24) on trailer.

**TRAILER CONNECTION TO HET TRACTOR - Continued**

*Figure 10. Trailer Connection To HET Tractor.*

21. Disconnect blue air line (29) from dummy coupling (30) on pogo stick (28) and connect to SERVICE coupling (25) on trailer.

**CAUTION**

Due to characteristics of air spring suspensions, allow approximately 5 minutes for the HET Tractor suspension to compensate for the added load. Failure to comply may result in damage to suspension.

**NOTE**

Refer to TM 9-2330-381-14 to tighten steering wedge, raise landing gear, adjust trailer height, and prepare trailer for operation.

22. Prepare trailer for operation.

**TRAILER CONNECTION TO HET TRACTOR - Continued****NOTE**

If air pressure gauges do not indicate 65 psi (4.5 bar) or more, trailer brakes will not release.

23. Check that air pressure gauges (31) indicate at least 65 psi (4.5 bar) before continuing.

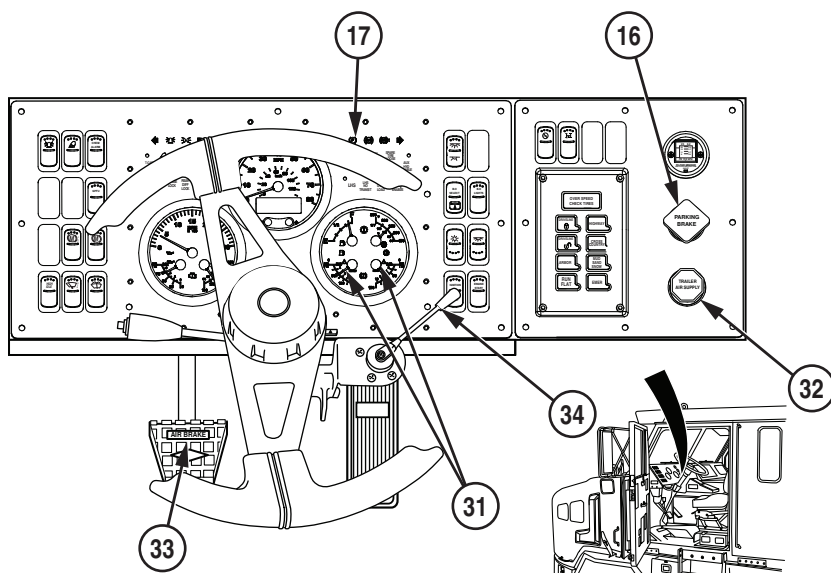


Figure 11. Trailer Connection To HET Tractor.

**NOTE**

When TRAILER AIR SUPPLY control is pushed in, HET Tractor PARKING BRAKE control applies and releases trailer parking brakes (if so equipped) together with HET Tractor.

24. Push in TRAILER AIR SUPPLY control (32) to pressurize trailer air system.
25. Push in PARKING BRAKE control (WP 0049) (16) to release parking brakes. Parking brake indicator (17) will go out.
26. Apply service brake pedal (WP 0047) (33) and check for proper operation.
27. Apply and release trailer hand brake control (WP 0048) (34) to check trailer brake operation.

**NOTE**

Refer to TM 9-2330-381-14 to adjust trailer steering (as required).

**TRAILER CONNECTION TO HET TRACTOR - Continued**

28. Drive HET Tractor and trailer (WP 0028).

**END OF TASK****TRAILER DISCONNECTION FROM HET TRACTOR**

1. Park HET Tractor (WP 0028).
2. Set transmission range selector (WP 0064) (1) to N (neutral).

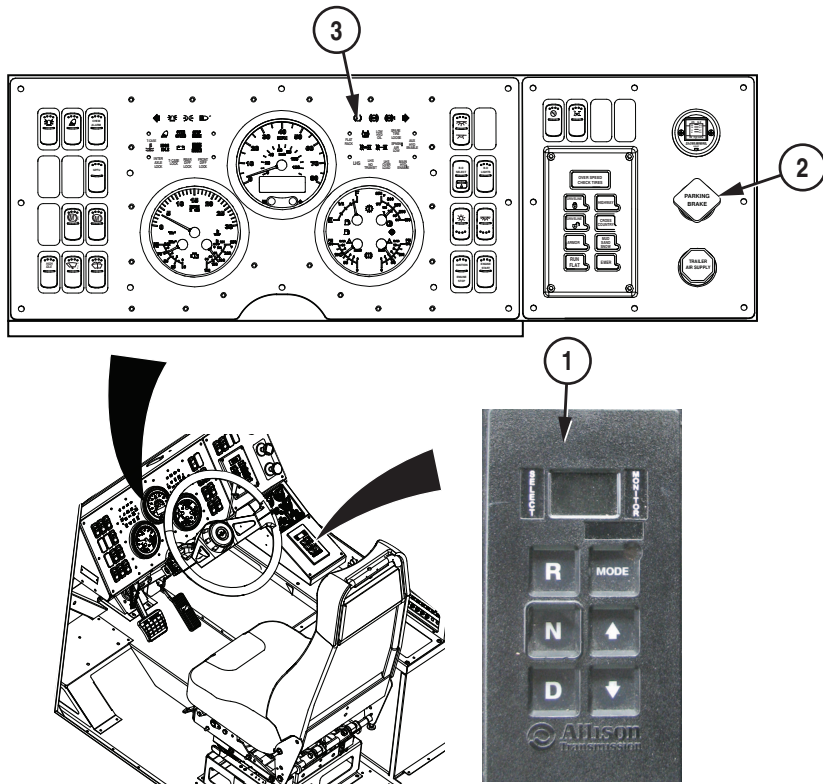


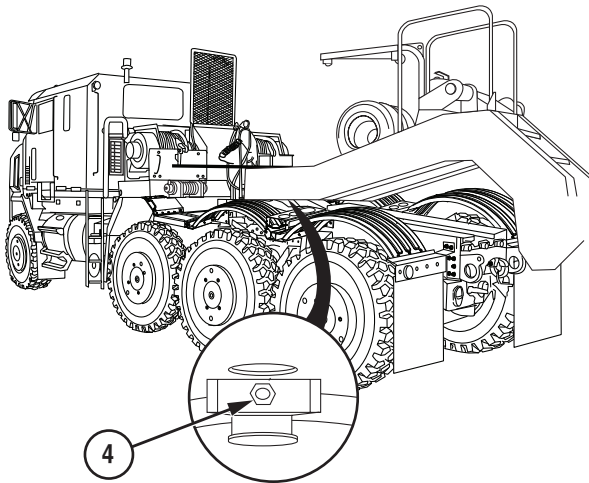
Figure 12. Trailer Disconnection From HET Tractor.

3. Pull out PARKING BRAKE control (WP 0049) (2) to apply parking brakes. Parking brake indicator (3) will illuminate (red).

**TRAILER DISCONNECTION FROM HET TRACTOR - Continued****CAUTION**

Use wheel chocks when uncoupling trailer. Trailer may roll, resulting in damage to equipment.

4. Place two chock blocks in front of outside tires on driver side front bogie and two chock blocks behind outside tires on passenger side front bogie.
5. Refer to TM 9-2330-381-14 to lower trailer landing gear.
6. Loosen steering wedge adjusting nut (4) one full turn counterclockwise.

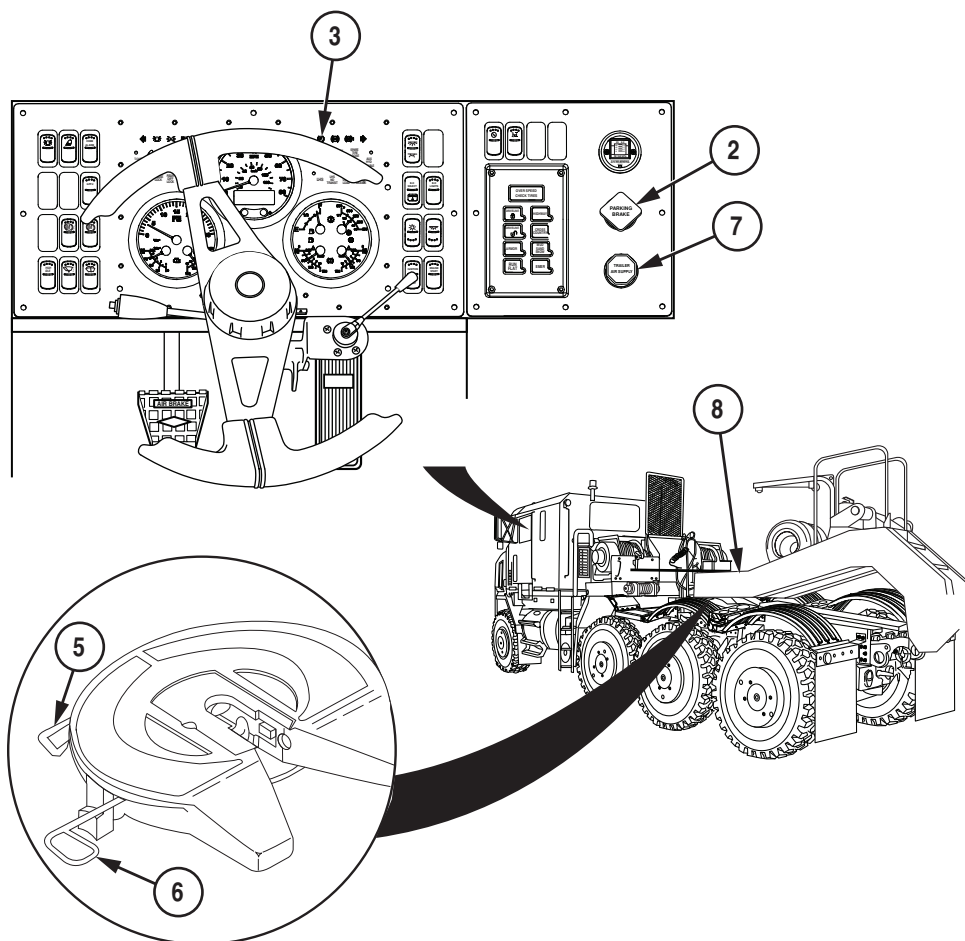


*Figure 13. Trailer Disconnection From HET Tractor.*

**NOTE**

If lock release handles cannot be moved, set trailer brakes and move HET Tractor backward slightly to relieve pressure on lock mechanism.

7. Pull primary lock release handle (5) and latch in out position.

**TRAILER DISCONNECTION FROM HET TRACTOR - Continued**

*Figure 14. Trailer Disconnection From HET Tractor.*

8. Pull secondary lock release handle (6) and latch in out position.
9. Push in PARKING BRAKE control (WP 0049) (2) to release parking brakes. Parking brake indicator (3) will go out.
10. Pull out TRAILER AIR SUPPLY control (7), to depressurize trailer air system.
11. Drive HET Tractor forward slowly approximately 1 ft. (0.31 m) until king pin is clear of lock mechanism.
12. Pull out PARKING BRAKE control (WP 0049) (2) to apply parking brakes. Parking brake indicator (3) will illuminate (red).

**TRAILER DISCONNECTION FROM HET TRACTOR - Continued**

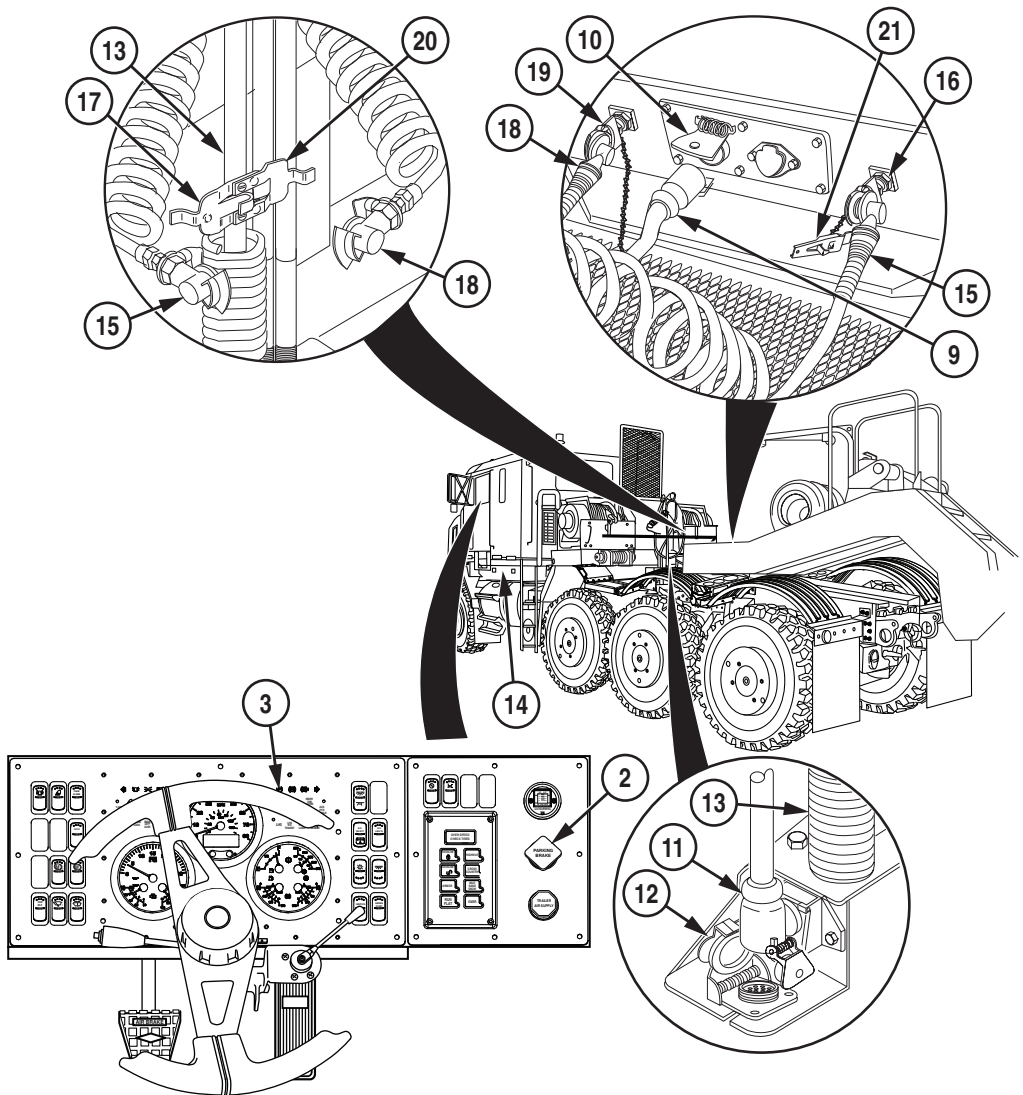
13. Raise trailer gooseneck (8) off fifth wheel (refer to TM 9-2330-381-14).

**CAUTION**

Ensure receptacle cover is closed completely over receptacle. Failure to comply may result in corrosion or intermittent operation.

14. Disconnect intervehicular wiring harness cable plug (9) from trailer receptacle (10).



**TRAILER DISCONNECTION FROM HET TRACTOR - Continued**

*Figure 15. Trailer Disconnection From HET Tractor.*

15. Remove intervehicular wiring harness cable plug (11) from receptacle (12) on pogo stick (13). Return harness to stowage box (14).
16. Disconnect red air line (15) from EMERGENCY coupling (16) on trailer and connect to dummy coupling (17) on pogo stick (13).

**TRAILER DISCONNECTION FROM HET TRACTOR - Continued**

17. Disconnect blue air line (18) from SERVICE coupling (19) on trailer and connect to dummy coupling (20) on pogo stick (13).
18. Install dummy couplings (21) on trailer couplings (16 and 19).
19. Push in PARKING BRAKE control (WP 0049) (2) to release parking brakes. Parking brake indicator (3) will go out.
20. Drive HET Tractor (WP 0028) forward slowly until it is clear of trailer.
21. Check HET Tractor brakes (WP 0047).

**END OF TASK****END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE WINCH OPERATION

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### INITIAL SETUP:

**Materials/Parts**

Plug, Ear (WP 0139, Table 1, Item 43)

**Personnel Required**

Operator and Assistant - - - (2)

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### PREPARATION TO OPERATE WINCH

#### NOTE

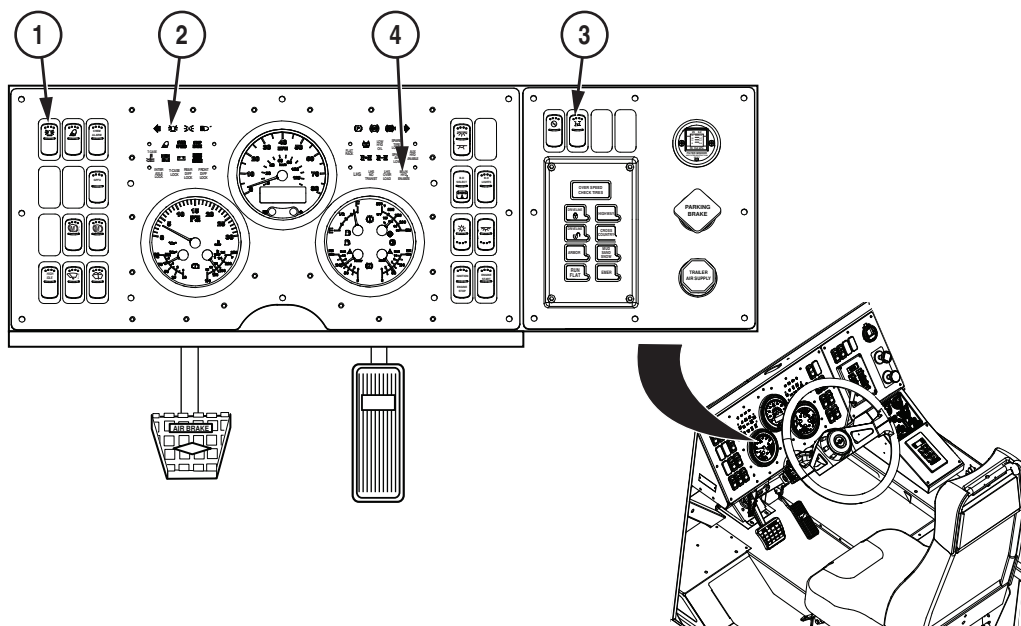
Both winches are required to load and unload the M1000 trailer. However, vehicle recovery operations can be performed using only one main winch.

1. Start engine (WP 0045).

#### CAUTION

Heavy Equipment Transporter (HET) Tractor must be positioned in a straight line with trailer or vehicle being recovered. Failure to comply may damage winch cable.

2. Position HET Tractor on solid ground so tires have good traction. Position HET Tractor for straight pull.
3. Push beacon light switch (1) up to on position. Beacon light indicator (2) will illuminate (green).

**PREPARATION TO OPERATE WINCH - Continued**

*Figure 1. Preparation To Operate Winch.*

**CAUTION**

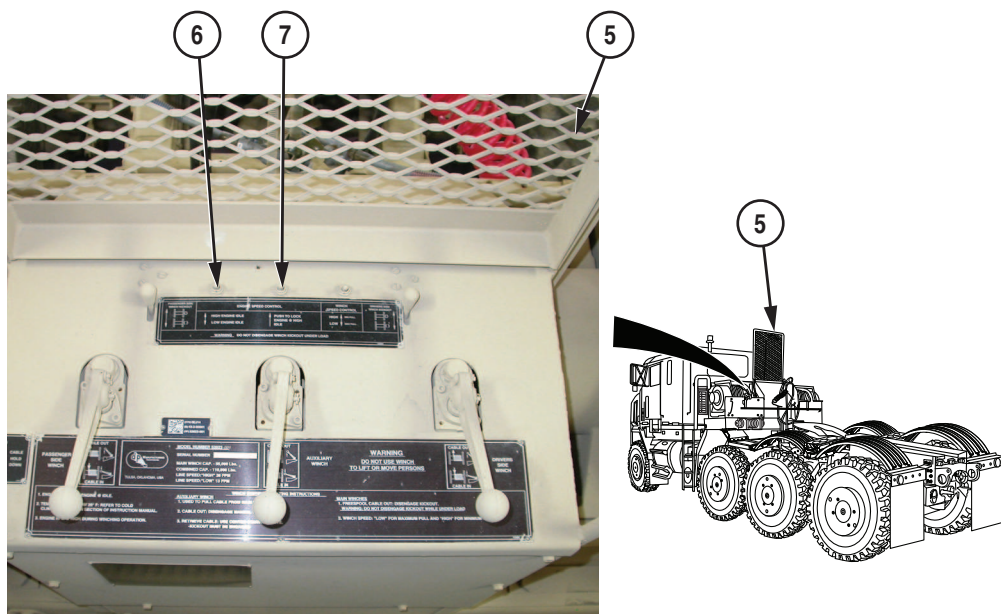
Do not attempt to engage PTO with engine in high idle. Failure to comply may result in damage to PTO.

4. With engine idling, push winch PTO enable switch (3) up to on position. MAIN HYD ENABLE indicator (4) will illuminate (green).

**WARNING**

Wear approved hearing protection devices when working within 30 ft. (9.2 m) of Heavy Equipment Transporter (HET) Tractor during winch operation. Permanent hearing loss may result if exposed to constant high noise levels.

5. Raise personnel guard (5) and lock in vertical position.

**PREPARATION TO OPERATE WINCH - Continued**

*Figure 2. Preparation To Operate Winch.*

6. Set HIGH ENGINE IDLE/LOW ENGINE IDLE switch (6) to HIGH ENGINE IDLE position.

**NOTE**

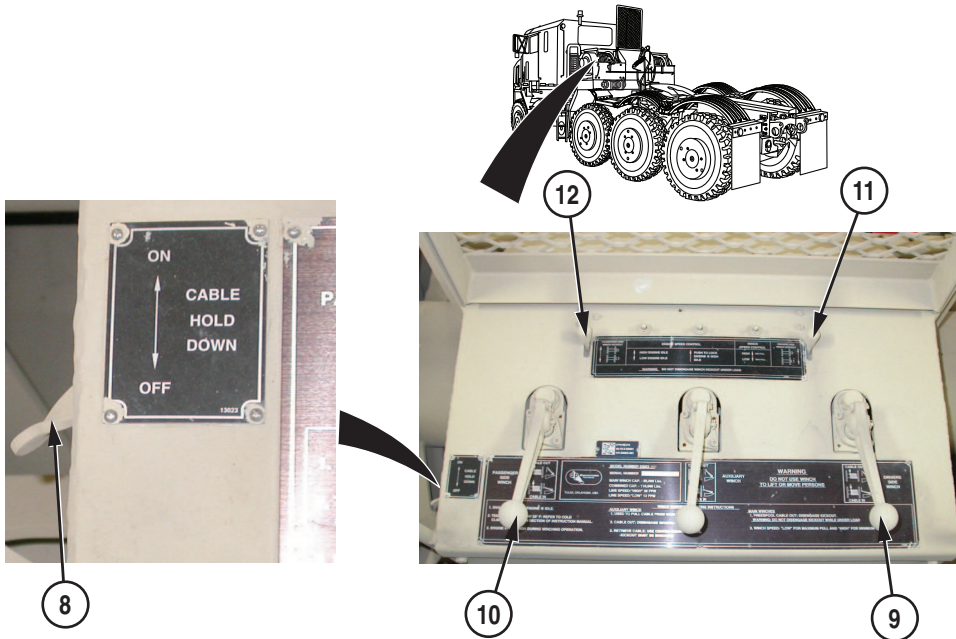
Engine speed should increase to approximately 1500 rpm when PUSH TO LOCK ENGINE @ HIGH IDLE switch is pushed and released.

7. Push and release PUSH TO LOCK ENGINE @ HIGH IDLE switch (7) to increase engine speed to high idle (1500 rpm).

**CAUTION**

Never move DRIVER SIDE WINCH control or PASSENGER SIDE WINCH control to CABLE OUT position with CABLE HOLD DOWN control in ON position. Failure to comply may result in cable tangling up on drum and damage to equipment.

8. Set CABLE HOLD DOWN control (8) to OFF position.

**PREPARATION TO OPERATE WINCH - Continued**

*Figure 3. Preparation To Operate Winch.*

**NOTE**

There are separate controls for driver side winch and passenger side winch. Use appropriate controls for winch being used.

9. Pull up on DRIVER SIDE WINCH control (9) or PASSENGER SIDE WINCH control (10) just enough to relieve tension on winch cable.
10. Set CABLE HOLD DOWN control (8) to ON position.

**CAUTION**

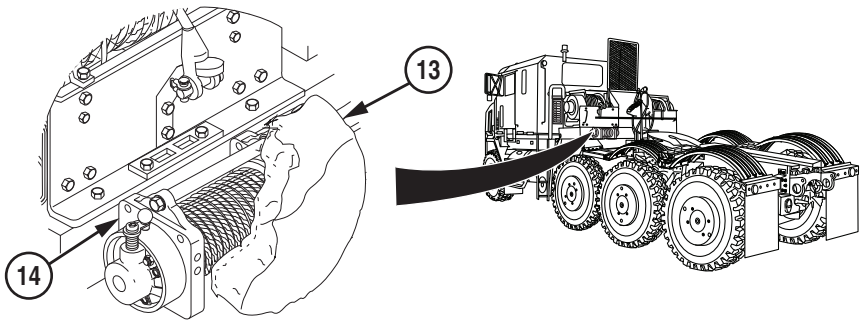
Never release kickouts with winch under load. Damage to equipment and load will result.

**NOTE**

- If the kickouts do not disengage, it may be necessary to rotate the winch drum slightly back and forth using the winch controls. This will relieve any tension so the kickouts can function.
- Kickouts are disengaged when winch drums do not turn when winch controls are actuated.

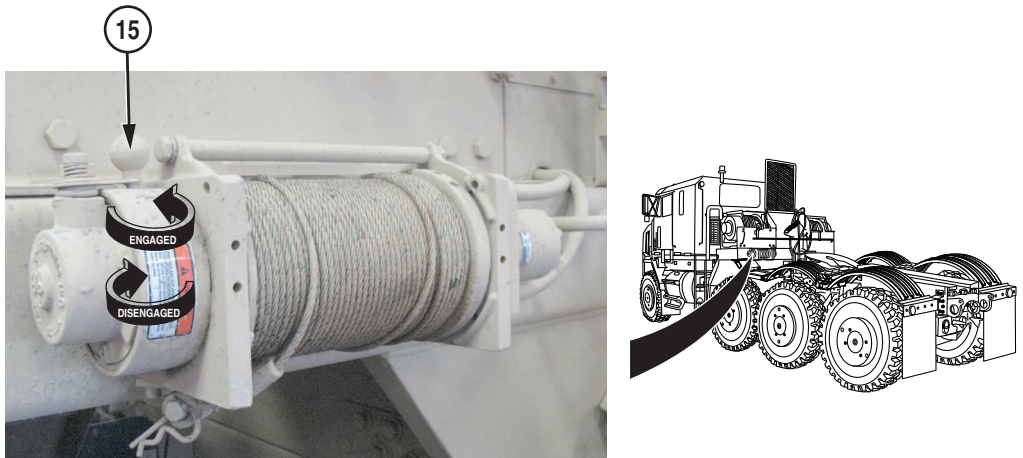
**PREPARATION TO OPERATE WINCH - Continued**

11. Pull DRIVER SIDE WINCH KICKOUT control (11) or PASSENGER SIDE WINCH KICKOUT control (12) back to release kickouts.
12. Remove cover (13) from auxiliary winch (14).



*Figure 4. Preparation To Operate Winch.*

13. Release auxiliary winch manual kickout control (15).



*Figure 5. Preparation To Operate Winch.*

**END OF TASK**

**CABLE PAYOUT, VEHICLE CONNECTION, AND RECOVERY****WARNING**

DO NOT use winches for lifting personnel. Failure to comply may result in serious injury or death to personnel.

**WARNING**

Always wear heavy gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in serious injury or death to personnel.

**WARNING**

Do not operate winch without personnel guard in place. Failure to comply may result in serious injury or death to personnel.

**WARNING**

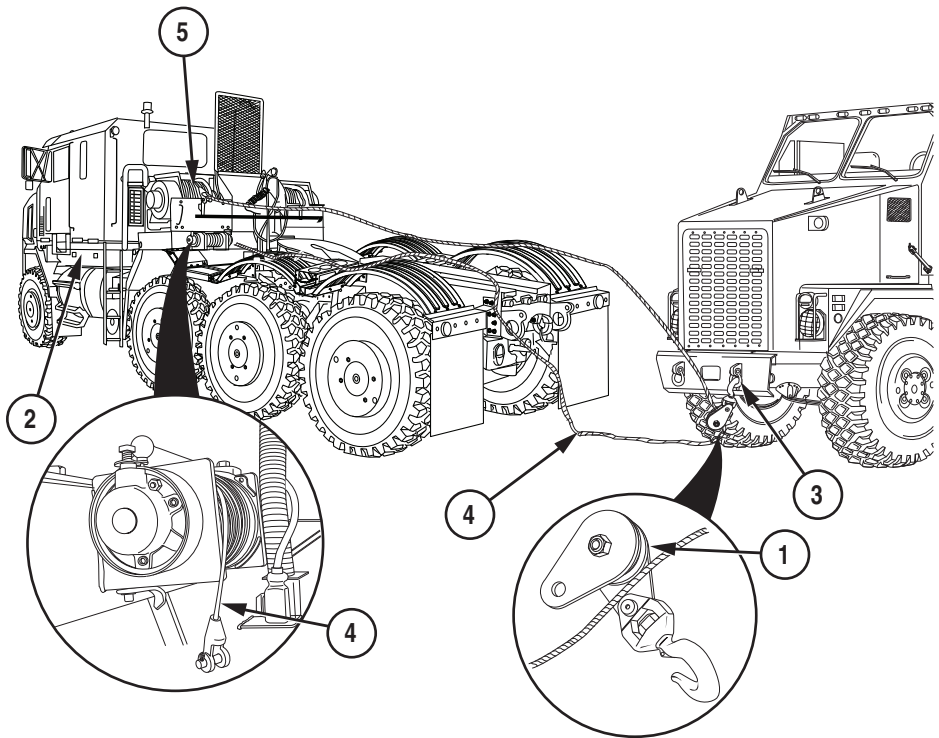
Do not place hands or feet near winch during operation. Failure to comply may result in serious injury or death to personnel.

**CAUTION**

Never move DRIVER SIDE WINCH control or PASSENGER SIDE WINCH control to CABLE OUT position with CABLE HOLD DOWN control in ON position. Failure to comply may result in cable tangling up on drum and damage to equipment.

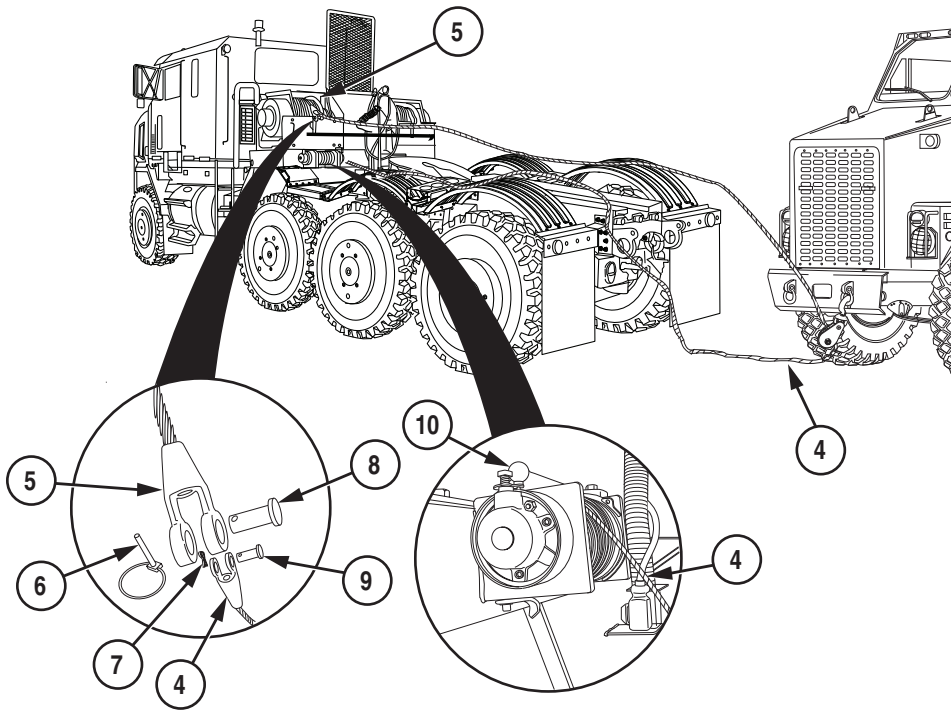
1. Remove snatch block (1) from stowage box (2).



**CABLE PAYOUT, VEHICLE CONNECTION, AND RECOVERY - Continued**

*Figure 6. Cable Payout, Vehicle Connection, And Recovery.*

2. Attach snatch block (1) to shackle (3) on disabled vehicle.
3. Open snatch block (1).
4. Grasp end of auxiliary winch cable (4) and pull through open snatch block (1).
5. Close snatch block (1).
6. Pull end of auxiliary winch cable (4) back to main winch cable (5).

**CABLE PAYOUT, VEHICLE CONNECTION, AND RECOVERY - Continued**

*Figure 7. Cable Payout, Vehicle Connection, And Recovery.*

**NOTE**

Driver side winch and passenger side winch can be used separately or in tandem to recover disabled vehicle. Single winch recovery (driver side) shown.

7. Remove pins (6) and (7) and clevis pins (8) and (9) from auxiliary winch cable (4) and main winch cable (5).
8. Attach auxiliary winch cable (4) to main winch cable (5).
9. Install clevis pin (9) and pin (7) in auxiliary winch cable (4) to secure.

**NOTE**

If auxiliary winch kickout does not engage, it may be necessary to actuate AUXILIARY WINCH control back and forth. This will align internal gears so kickouts can function.

10. Engage auxiliary winch manual kickout control (10).

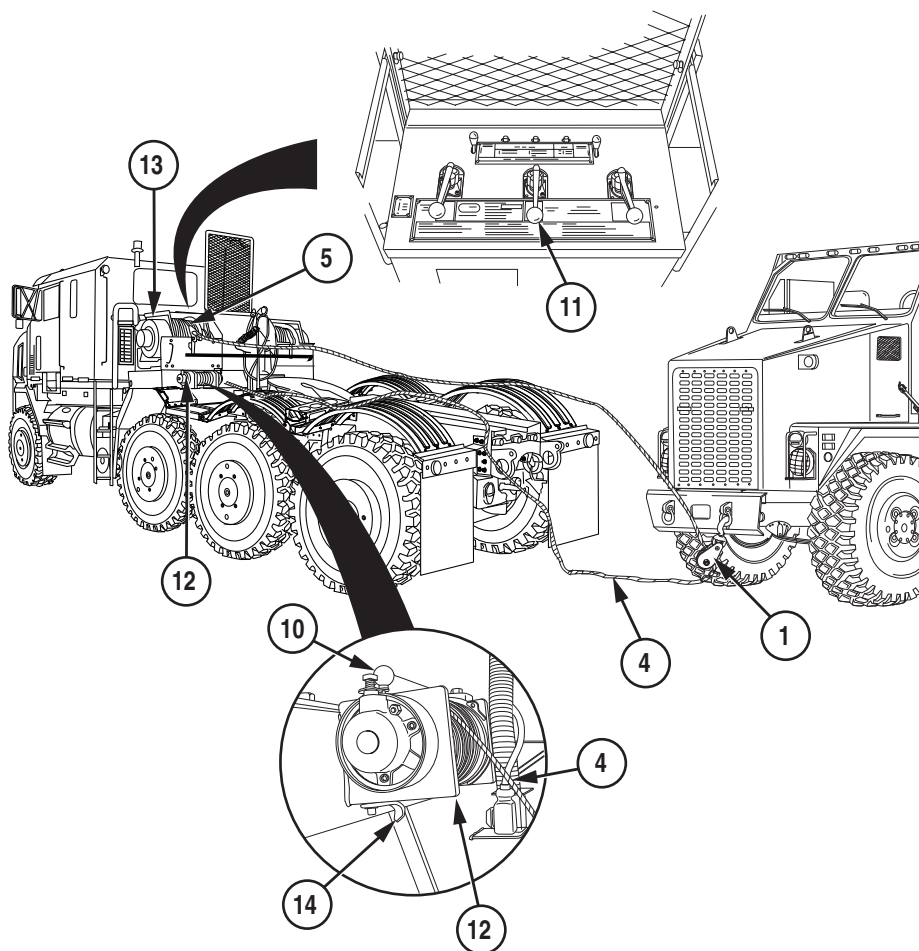
**CABLE PAYOUT, VEHICLE CONNECTION, AND RECOVERY - Continued****WARNING**

Ensure that both DRIVER SIDE and PASSENGER SIDE WINCH KICKOUT controls are disengaged. Failure to disengage KICKOUT controls may result in serious injury or death to personnel.

**WARNING**

Use care when operating auxiliary winch control lever. Cable may pay out at high rate of speed which may result in serious injury or death to personnel.

11. Push down and hold AUXILIARY WINCH control (11) to pull auxiliary winch cable (4) back to auxiliary winch (12).

**CABLE PAYOUT, VEHICLE CONNECTION, AND RECOVERY - Continued**

*Figure 8. Cable Payout, Vehicle Connection, And Recovery.*

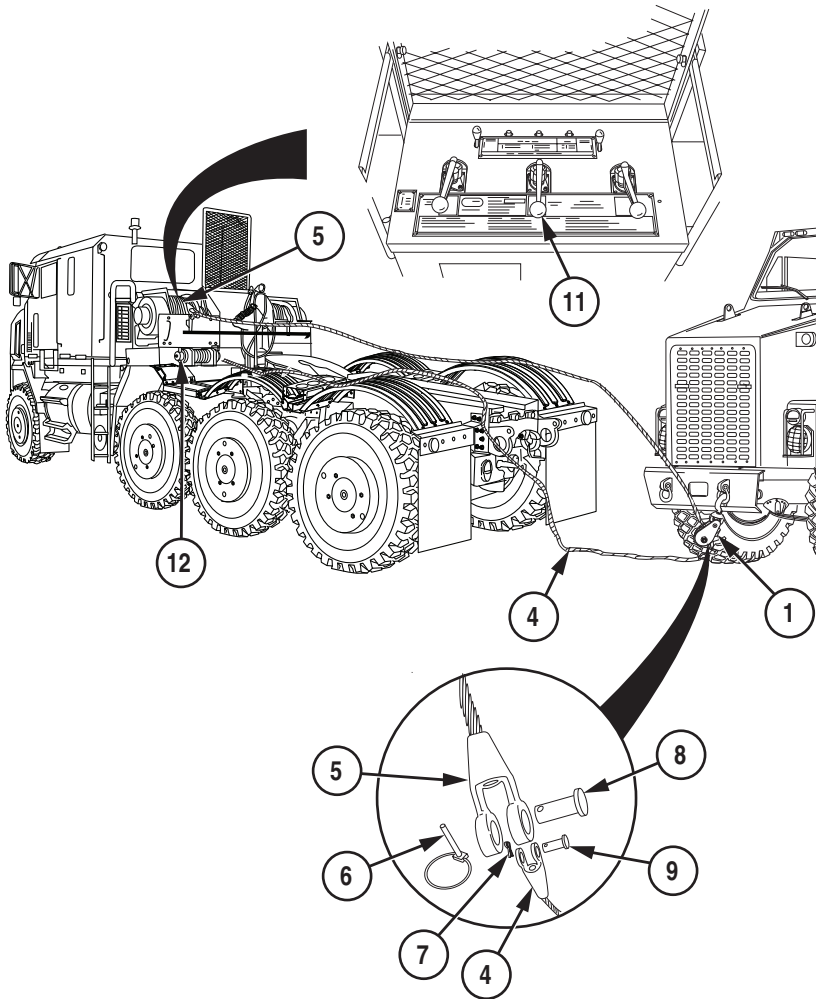
12. Hold down AUXILIARY WINCH control (11) until main winch cable (5) has reached disabled vehicle.

**CAUTION**

- There must be at least five wraps of cable left on winch drum. If not, move HET Tractor closer to disabled vehicle or shut down winch. Failure to do so may result in loosened cable and damage to equipment.

**CABLE PAYOUT, VEHICLE CONNECTION, AND RECOVERY - Continued**

- Never release cable hold-downs with most of cable out. Failure to comply may result in cable becoming tangled and damage to equipment.
13. Ensure there are at least five wraps of cable left on winch drum (13).
  14. Remove pin (7) and clevis pin (8) from auxiliary winch cable (4).



*Figure 9. Cable Payout, Vehicle Connection, And Recovery.*

15. Disconnect auxiliary winch cable (4) from main winch cable (5).

**CABLE PAYOUT, VEHICLE CONNECTION, AND RECOVERY - Continued**

16. Install clevis pin (9) and pin (7) in auxiliary winch cable (4).
17. Remove snatch block (1) from disabled vehicle. Remove auxiliary winch cable (4) from snatch block (1).
18. With the aid of an assistant, walk out auxiliary winch cable (4) to eliminate uneven wraps on spool.

**WARNING**

Always wear heavy gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in serious injury or death to personnel.

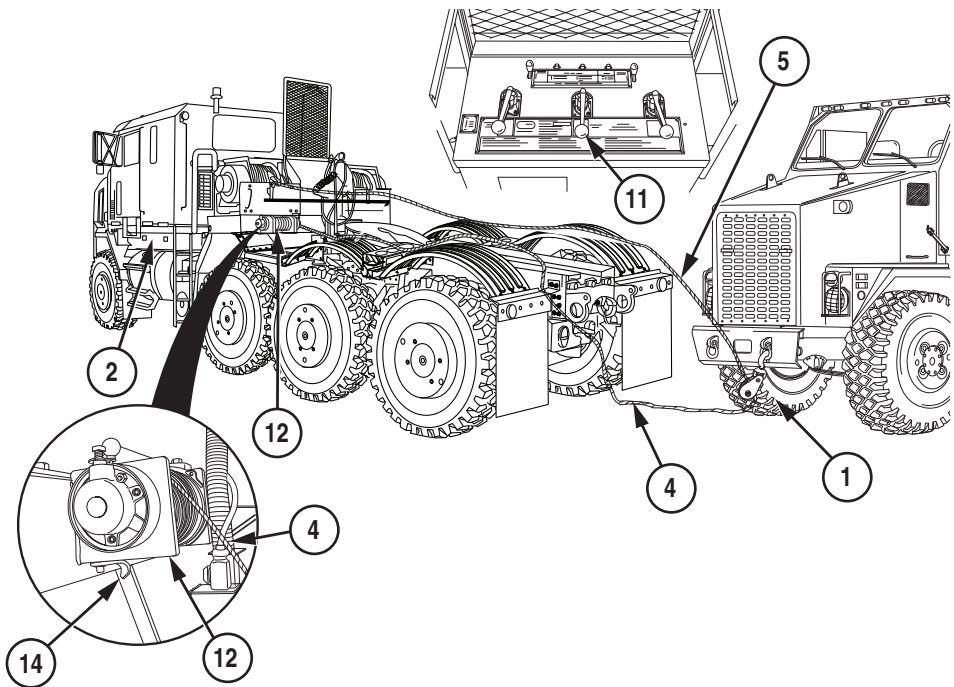
**WARNING**

Personnel must use caution when winding auxiliary winch cable onto the drum. Tension must be kept on cable when winding on drum. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

**NOTE**

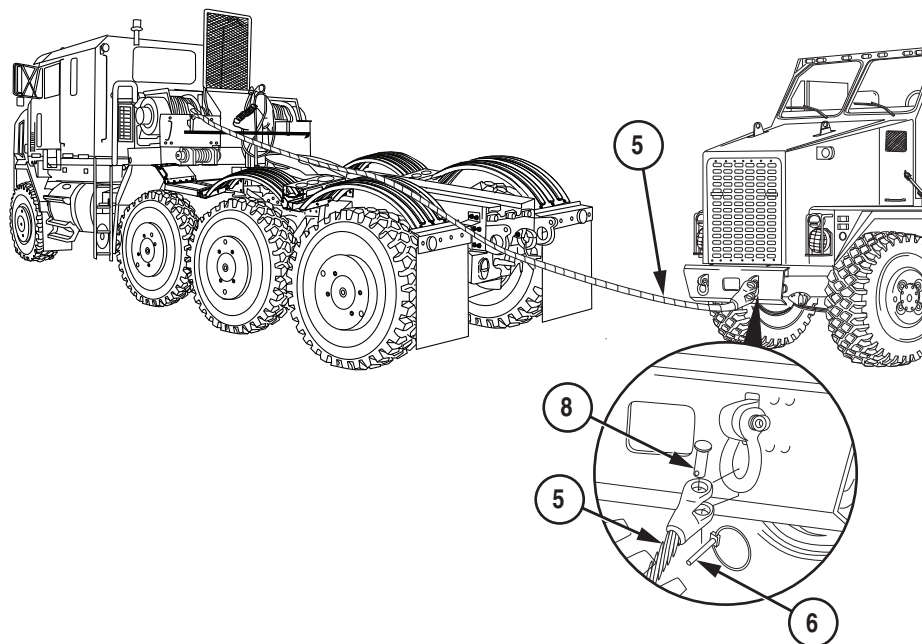
Low idle may be used when reeling in auxiliary winch cable for easier winding.

19. Push AUXILIARY WINCH control (11) down to CABLE IN position while assistant walks auxiliary winch cable (4) back to auxiliary winch (12).

**CABLE PAYOUT, VEHICLE CONNECTION, AND RECOVERY - Continued**

*Figure 10. Cable Payout, Vehicle Connection, And Recovery.*

20. Stow auxiliary winch cable (4) on hook (14).
21. Stow snatch block (1) in rear stowage box.
22. Connect main winch cable (5) to disabled vehicle.

**CABLE PAYOUT, VEHICLE CONNECTION, AND RECOVERY - Continued**

*Figure 11. Cable Payout, Vehicle Connection, And Recovery.*

23. Install clevis pin (8) and pin (6) in main winch cable (5).

**WARNING**

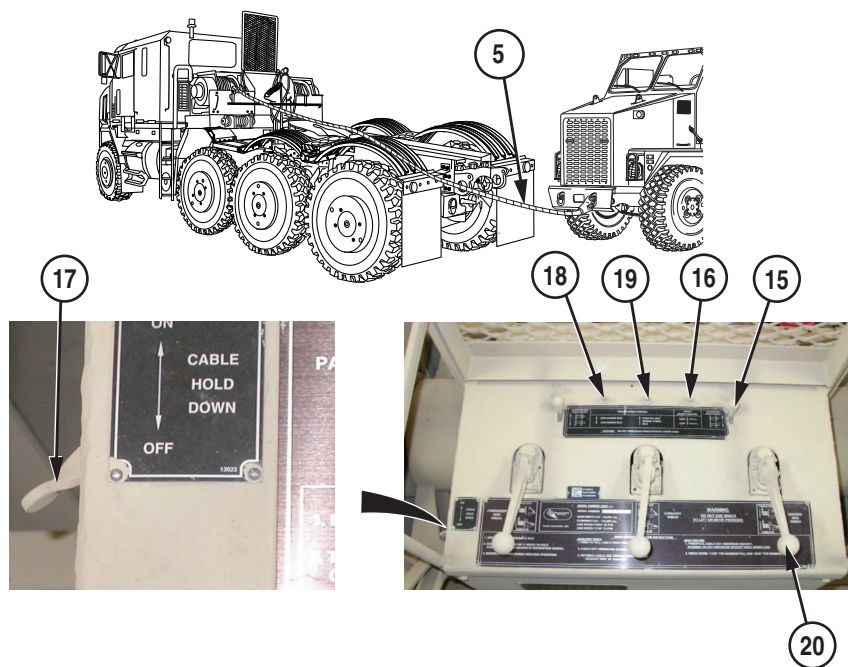
Keep all personnel clear of area when tension is on winch cable. Winch cable could come loose or break and whip. Failure to comply may result in serious injury or death to personnel.

**NOTE**

There are separate controls for driver side winch and passenger side winch. Use appropriate controls for winch(es) being used (driver side shown).

24. Push DRIVER SIDE WINCH KICKOUT control (15) forward to engage winch kickout.



**CABLE PAYOUT, VEHICLE CONNECTION, AND RECOVERY - Continued**

*Figure 12. Cable Payout, Vehicle Connection, And Recovery.*

25. Set WINCH SPEED CONTROL switch (16) to LOW position.
26. Set CABLE HOLD DOWN control (17) to ON position.
27. Set HIGH ENGINE IDLE/LOW ENGINE IDLE switch (18) to HIGH ENGINE IDLE position.
28. Push and release PUSH TO LOCK ENGINE @ HIGH IDLE switch (19) to increase engine speed to high idle (1500 rpm).

**WARNING**

Personnel must use caution when winding main winch cable onto the drum. Tension must be kept on cable when winding on drum. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

**CAUTION**

- Check cable routing before reeling in main winch cable. Failure to have cable routed correctly may result in damage to equipment.

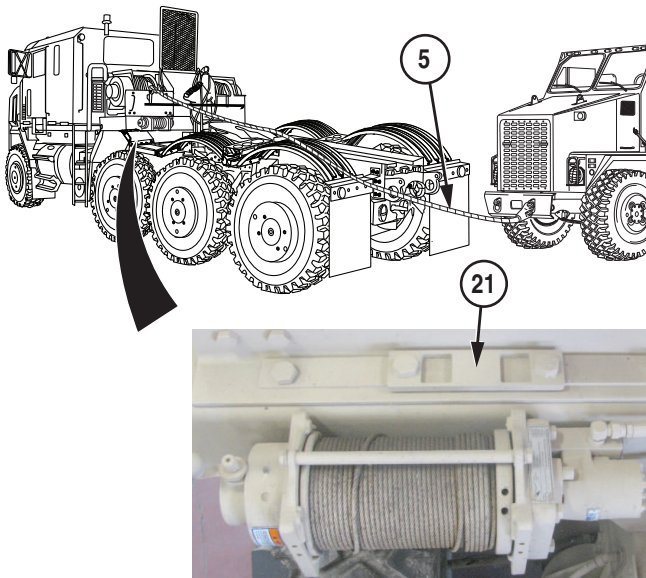
**CABLE PAYOUT, VEHICLE CONNECTION, AND RECOVERY - Continued**

- If excess cable is laying on the platform or ground, assistant must provide tension while the operator takes up the slack. Failure to comply may result in damage to equipment.

**NOTE**

When both driver side and passenger side winches are being used to recover disabled vehicle, reel in winch cables in equal amounts.

29. Push DRIVER SIDE WINCH control (20) down to CABLE IN position. Slowly tighten winch cable (5) to recover disabled vehicle.
30. When winding in main winch cable (5), retrieve tank bar from trailer tool kit and have assistant(s) place tank bar in bracket (21) to help direct main winch cable (5) evenly onto winch drum.



*Figure 13. Cable Payout, Vehicle Connection, And Recovery.*

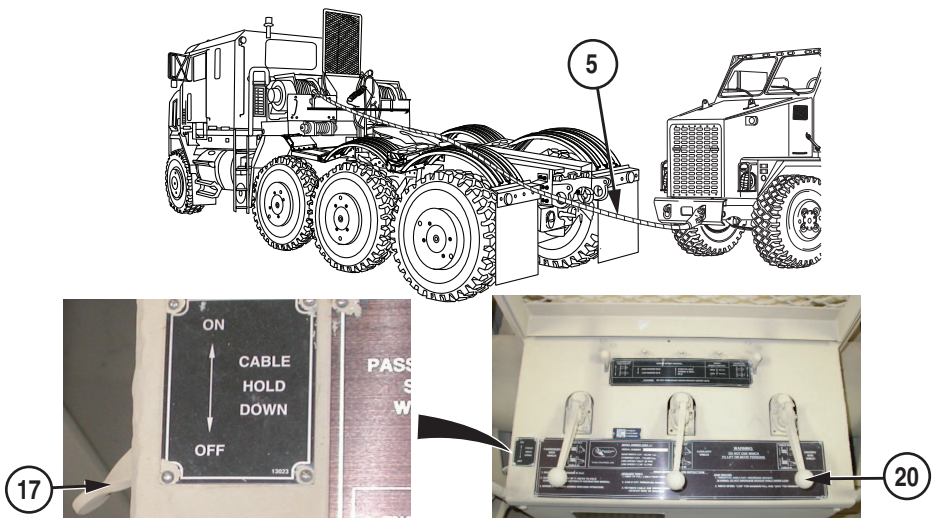
**WARNING**

Keep all personnel clear of area when tension is on winch cable. Winch cable could come loose or break and whip. Failure to comply may result in serious injury or death to personnel.

**CABLE PAYOUT, VEHICLE CONNECTION, AND RECOVERY - Continued****CAUTION**

Never move DRIVER SIDE WINCH control or PASSENGER SIDE WINCH control to CABLE OUT position with CABLE HOLD DOWN control in ON position. Failure to comply may result in cable tangling up on drum and damage to equipment.

31. When disabled vehicle is fully recovered, set CABLE HOLD DOWN control (17) to OFF position.



*Figure 14. Cable Payout, Vehicle Connection, And Recovery.*

32. Pull DRIVER SIDE WINCH control (20) up to CABLE OUT position to pay out main winch cable (5) until there is enough slack to disconnect it from disabled vehicle.

**END OF TASK**

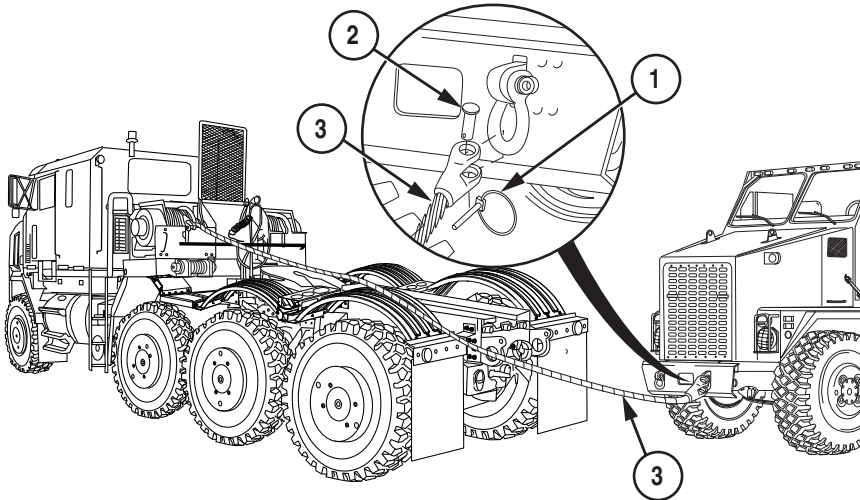
## WINCH DISCONNECTION AND STOWAGE

### WARNING



Some windup may occur in the cable during winching. Any twisting of the cable can be felt when the pin is being removed from clevis. Do not attempt to hold cable end to prevent twisting. Do not put fingers or other objects into the jaws of the clevis when releasing the cable. Always drop the cable away from your body when releasing. Failure to comply may result in serious injury or death to personnel.

1. Remove pin (1) and clevis pin (2) from main winch cable (3).



*Figure 15. Winch Disconnection And Stowage.*

2. Disconnect main winch cable (3) from recovered vehicle.
3. Install clevis pin (2) and pin (1) in main winch cable (3).

### CAUTION

Never move DRIVER SIDE WINCH control or PASSENGER SIDE WINCH control to CABLE OUT position with CABLE HOLD DOWN control in ON position. Failure to comply may result in cable tangling up on drum and damage to equipment.

**WINCH DISCONNECTION AND STOWAGE - Continued**

4. Set CABLE HOLD DOWN control (4) to ON position.

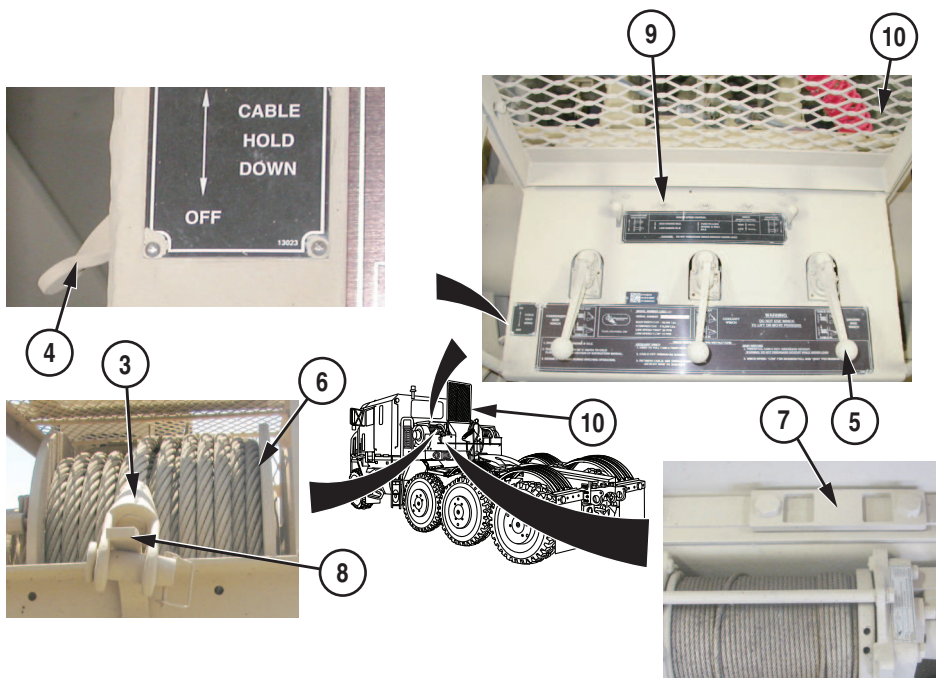


Figure 16. Winch Disconnection And Stowage.

**NOTE**

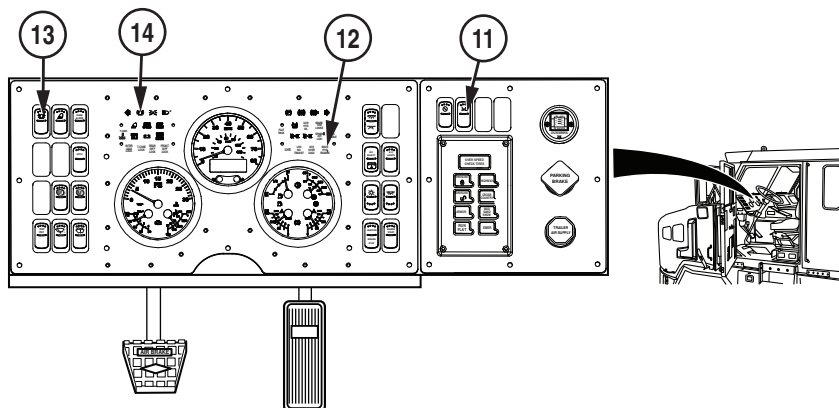
There are separate controls for driver side winch and passenger side winch. Use appropriate controls for winch(es) being used (driver side shown).

5. With aid of an assistant, push DRIVER SIDE WINCH control (5) down to CABLE IN position and reel in main winch cable (3) on winch drum (6).
6. When winding in main winch cable (3), retrieve tank bar from trailer tool kit and have assistant place tank bar in bracket (7) to help direct main winch cable (3) evenly onto winch drum.
7. Secure main winch cable (3) on drum hook (8).
8. Set HIGH ENGINE IDLE/LOW ENGINE IDLE switch (9) to LOW ENGINE IDLE position.
9. Lower personnel guard (10) on winch control console.

**WINCH DISCONNECTION AND STOWAGE - Continued****NOTE**

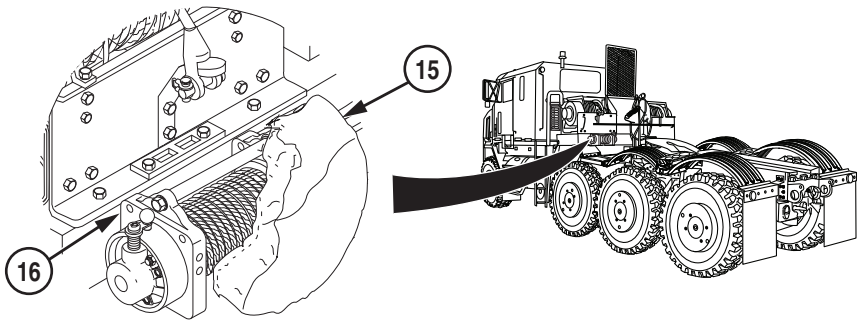
Engine may stall if transmission is shifted into gear before winch PTO enable switch is set to off position.

10. Push winch PTO enable switch (11) down to off position. MAIN HYD ENABLE indicator (12) will go out.



*Figure 17. Winch Disconnection And Stowage.*

11. Push beacon light switch (13) down to off position. Beacon light indicator (14) will go out.
12. Shut OFF engine (WP 0050).
13. Install cover (15) on auxiliary winch (16).

**WINCH DISCONNECTION AND STOWAGE - Continued**

*Figure 18. Winch Disconnection And Stowage.*

**END OF TASK**

**END OF WORK PACKAGE**





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## OPERATOR MAINTENANCE GAS PARTICULATE FILTER UNIT (GPFU) OPERATION

---

### INITIAL SETUP:

#### References

TM 3-4240-280-10 (WP 0136)

FM 21-10 (WP 0136)

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### GAS PARTICULATE FILTER UNIT (GPFU) OPERATION

#### WARNING



- BE AWARE that the gas particulate filter unit or the field protective mask for Chemical, Biological, Radiological, and Nuclear (CBRN) protection WILL NOT offer safety from carbon monoxide poisoning.
- If CBRN exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your unit CBRN Officer or CBRN NCO for appropriate handling or disposal procedures.
- Unprotected personnel may experience injury or death if residual toxic agents or radioactive material are present. Wear protective mask, hood, protective overgarments, chemical protective gloves, and boots in CBRN environments.
- If required to remain inside the Heavy Equipment Transporter (HET) Tractor during extreme heat, occupants should follow the water intake, work/rest cycle, and other heat stress preventive medicine measures contained in FM 21-10. Failure to comply may result in serious injury or death to personnel.

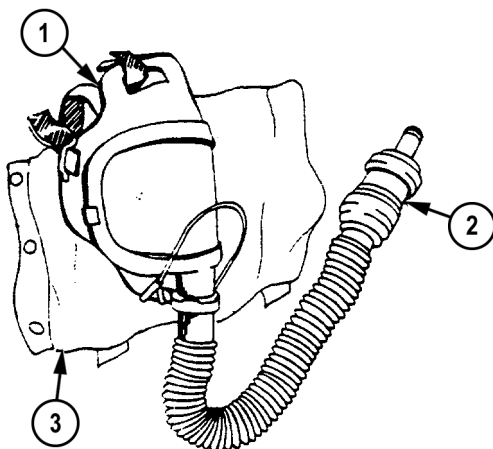
#### NOTE

- The GPFU is designed to operate with the M25A1 or M42 protective mask.
- Perform Steps (1) through (7) only when under CBRN attack or when ordered to do so.

**GAS PARTICULATE FILTER UNIT (GPFU) OPERATION - Continued**

- For detailed information concerning protective mask, refer to TM 3-4240-280-10.

1. Remove protective mask (1) and canister (2) from pouch (3).



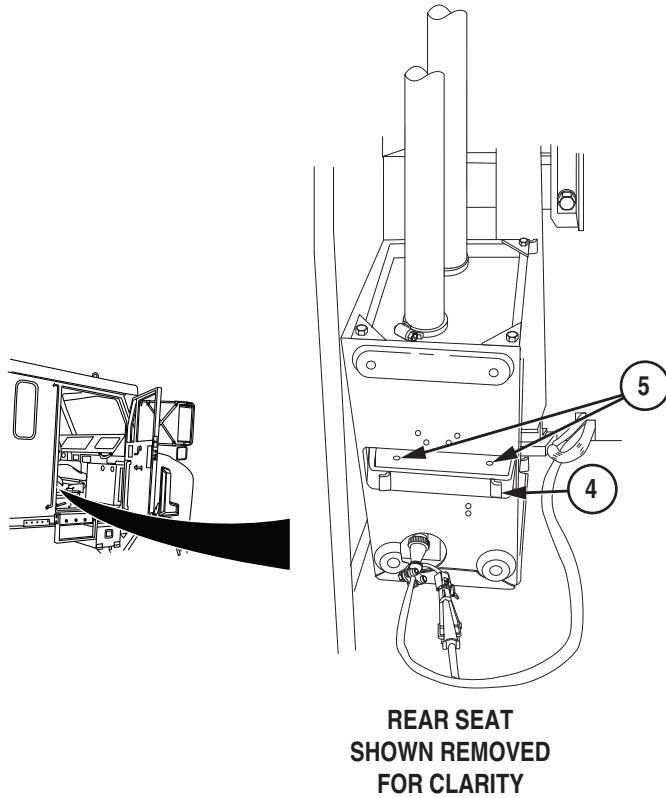
*Figure 1. Gas Particulate Filter Unit (GPFU) Operation.*

2. Put on protective mask (1).
3. Clear and seal protective mask (1).

**WARNING**

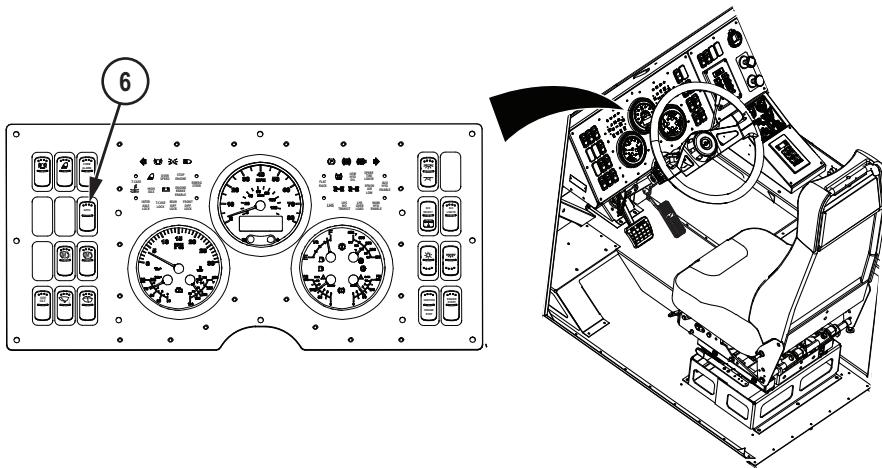
Spring clip on filter assembly air intake must be pulled so intake holes are open for gas particulate filter system to work. Failure to pull out clip may result in serious injury or death to personnel.

4. Pull out on spring clip (4) to uncover intake holes (5).

**GAS PARTICULATE FILTER UNIT (GPFU) OPERATION - Continued**

*Figure 2. Gas Particulate Filter Unit (GPFU) Operation.*

5. Push GPFU switch (6) up to on position.

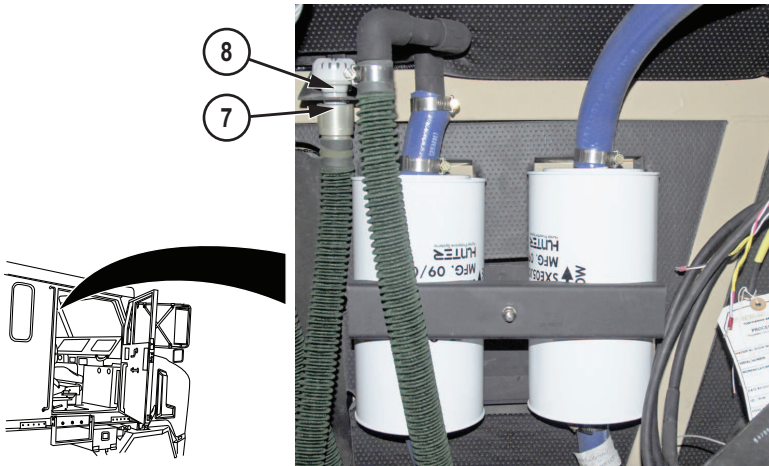
**GAS PARTICULATE FILTER UNIT (GPFU) OPERATION - Continued**

*Figure 3. Gas Particulate Filter Unit (GPFU) Operation.*

**NOTE**

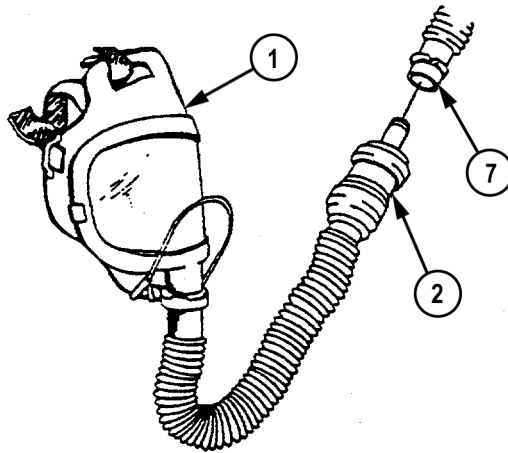
Three air duct hoses are located on each cab side wall, behind driver and passenger seats.

6. Disconnect air duct hose breakaway socket (7) from mount (8).



*Figure 4. Gas Particulate Filter Unit (GPFU) Operation.*

7. Connect air duct hose breakaway socket (7) to canister (2) of protective mask (1).

**GAS PARTICULATE FILTER UNIT (GPFU) OPERATION - Continued**

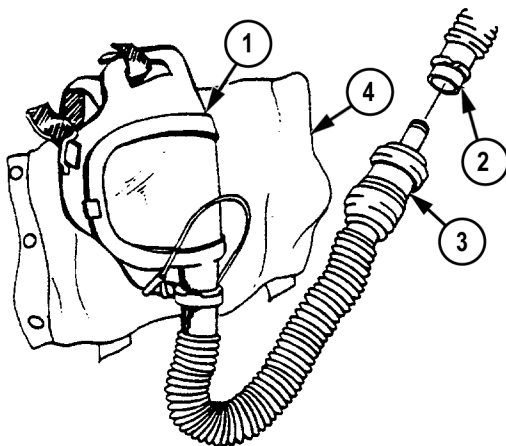
*Figure 5. Gas Particulate Filter Unit (GPFU) Operation.*

8. Breathe through protective mask (1).

**END OF TASK****GAS PARTICULATE FILTER HOSE REMOVAL AND STOWAGE****NOTE**

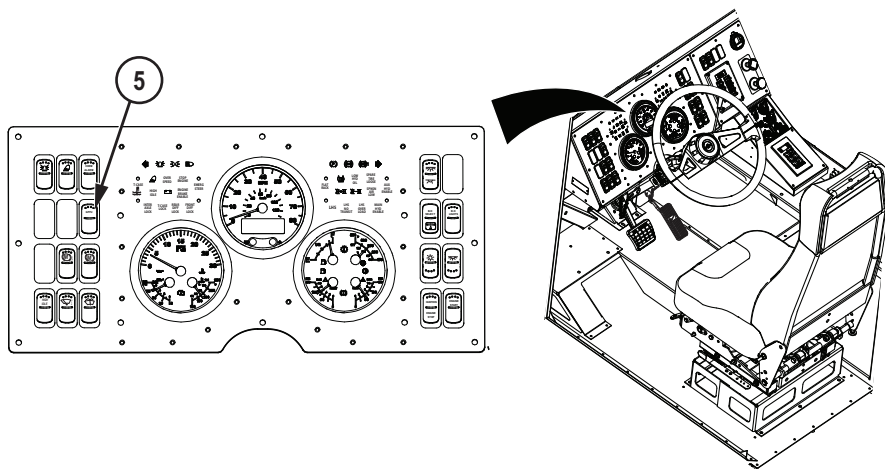
Perform Steps (1) through (5) only when CBRN attack is over or when ordered to do so.

1. When protective mask (1) is no longer needed, disconnect air duct hose breakaway socket (2) from canister (3).

**GAS PARTICULATE FILTER HOSE REMOVAL AND STOWAGE - Continued**

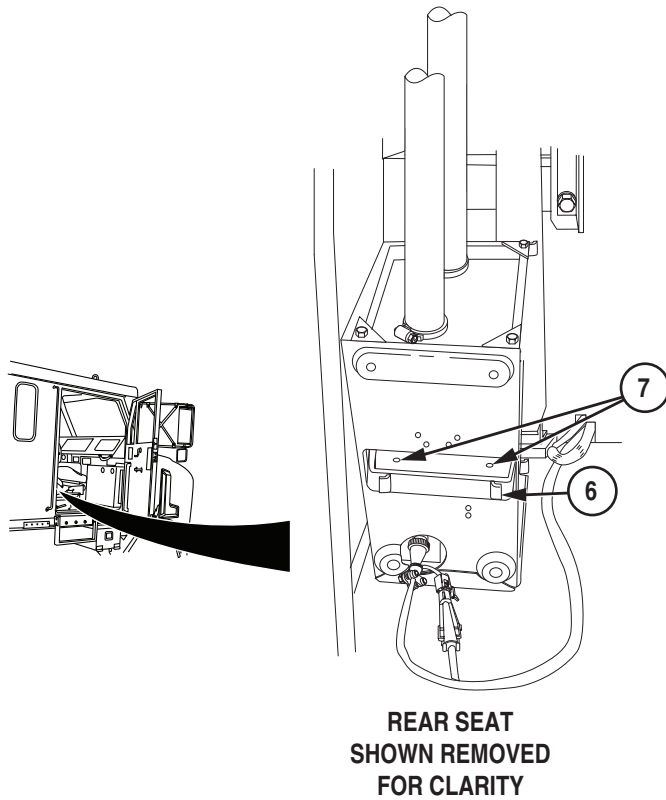
*Figure 6. Gas Particulate Filter Hose Removal and Stowage.*

2. Remove mask (1) and place in pouch (4).
3. Push GPFU switch (5) down to off position.



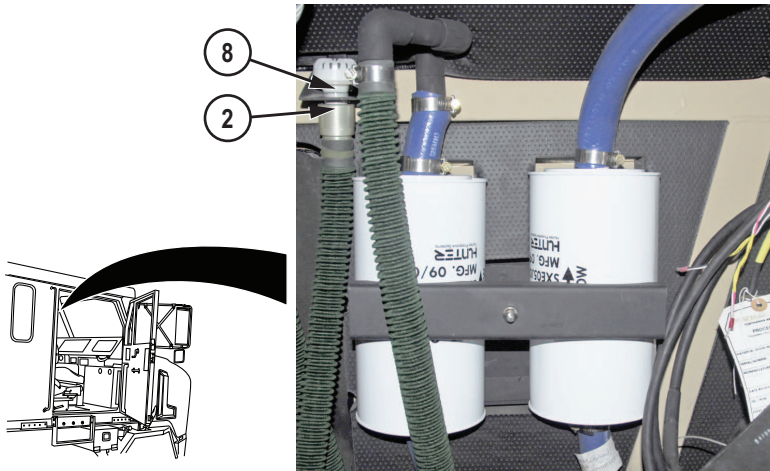
*Figure 7. Gas Particulate Filter Hose Removal and Stowage.*

4. Push in spring clip (6) to cover intake holes (7).

**GAS PARTICULATE FILTER HOSE REMOVAL AND STOWAGE - Continued**

*Figure 8. Gas Particulate Filter Hose Removal and Stowage.*

5. Connect air duct hose breakaway socket (2) to mount (8).

**GAS PARTICULATE FILTER HOSE REMOVAL AND STOWAGE - Continued**

*Figure 9. Gas Particulate Filter Hose Removal and Stowage.*

**END OF TASK**

**END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE RIFLE STOWAGE MOUNT OPERATION

---

### INITIAL SETUP:

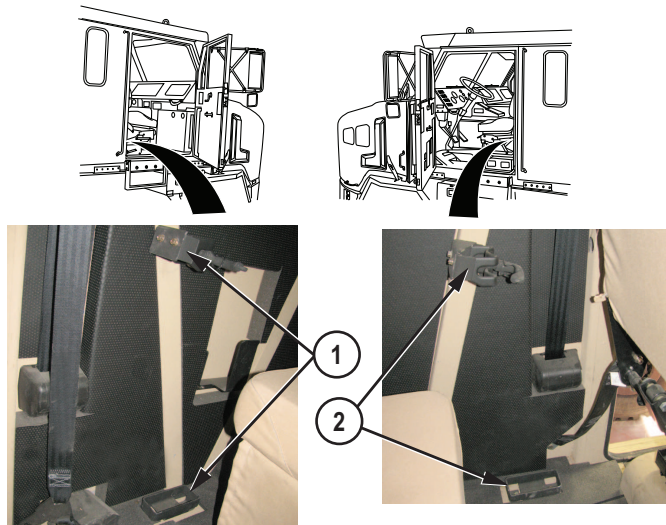
Not Applicable

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### RIFLE STOWAGE IN STOWAGE MOUNT

There are two rifle stowage mounts in Heavy Equipment Transporter (HET) Tractor cab:

- Passenger side rifle stowage mount (1) is mounted on bulkhead to rear of passenger seat.
- Driver side rifle stowage mount (2) is mounted on bulkhead to rear of driver seat.

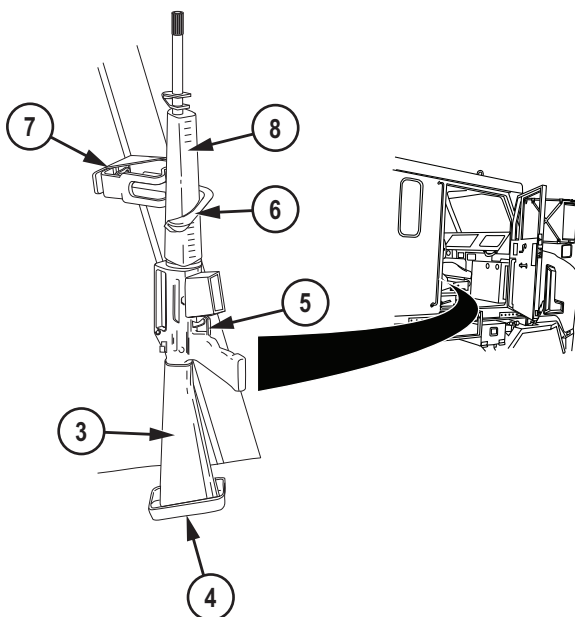


*Figure 1. Rifle Stowage Mount Operation.*

### NOTE

Both driver side and passenger side rifle stowage mounts are operated the same way. Passenger side shown.

1. Position rifle butt (3) in lower bracket (4) with trigger guard (5) toward rear.



*Figure 2. Rifle Stowage in Stowage Mount.*

2. Pull handle (6) of top mount (7) out and push toward outside of cab.
3. Place rifle heat guard (8) in top mount (7).
4. Pull handle (6) across heat guard (8).
5. Ensure rifle is held tightly in rifle stowage mount.

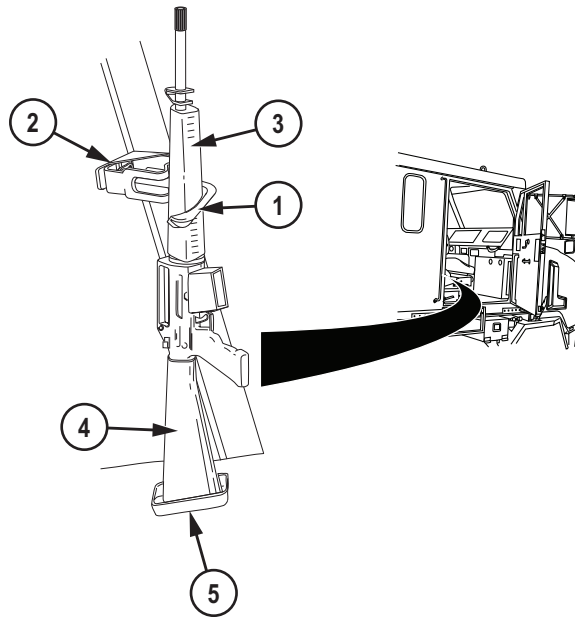
## **END OF TASK**

## **RIFLE REMOVAL FROM STOWAGE MOUNT**

### **NOTE**

Both driver side and passenger side rifle stowage mounts are operated the same way. Passenger side shown.

1. Pull handle (1) of top mount (2) out and push toward outside of cab.

**RIFLE REMOVAL FROM STOWAGE MOUNT - Continued**

*Figure 3. Rifle Removal From Stowage Mount.*

2. Remove rifle heat guard (3) from top mount (2).
3. Remove rifle butt (4) from lower bracket (5).

**END OF TASK**

**END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE CHEMICAL ALARM KIT OPERATION

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### INITIAL SETUP:

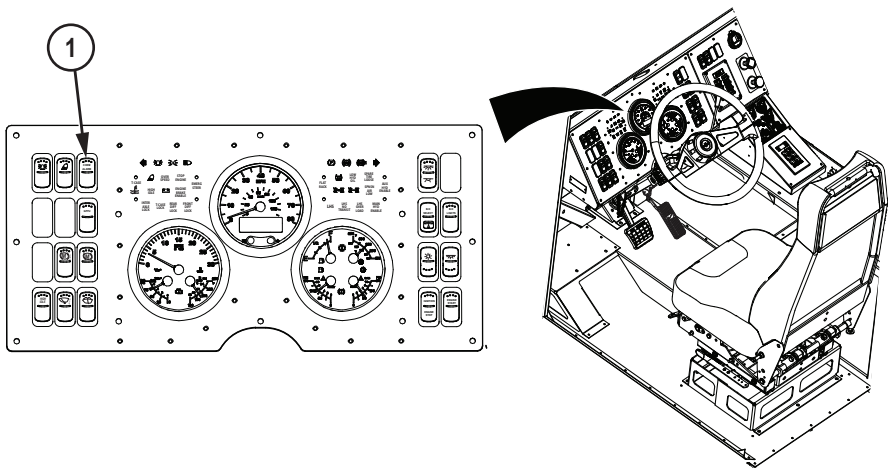
#### References

TM 3-6665-225-12 (WP 0136)

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### OPERATE CHEMICAL ALARM

1. Push (WP 0026) (1) up to on position.



*Figure 1. Operate Chemical Alarm.*

2. Operate chemical alarm per (WP 0136).

**END OF TASK**

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
DECONTAMINATION KIT OPERATION**

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**INITIAL SETUP:**

**References**

TM 3-4230-214-12&P. (WP 0136)

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**OPERATE DECONTAMINATION KIT**

Operate decontamination kit per TM 3-4230-214-12&P. (WP 0136)

**END OF TASK**

**END OF WORK PACKAGE**





**OPERATOR MAINTENANCE  
RADIO OPERATION**

---

**INITIAL SETUP:**

**References**

- TM 11-5820-401-10-1 (WP 0136)
  - TM 11-5820-890-10-1 (WP 0136)
- 

**OPERATE RADIO**

1. Operate AN/VRC-46 radio per TM 11-5820-401-10-1. (WP 0136)
2. Operate AN/VRC-90 radio per TM 11-5820-890-10-1. (WP 0136)

**END OF TASK**

**END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE TRANSMISSION OPERATION

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### INITIAL SETUP:

Not Applicable

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### ENGAGE NEUTRAL

#### CAUTION

If transmission range selector flashes current range selection while operating Heavy Equipment Transporter (HET) Tractor (shift selection is inhibited), DO NOT shut off engine or attempt to change range selection. Shutting off engine may result in the inability to select a drive range at startup, and diagnostic data may be lost. Move HET Tractor to safe place and notify field level maintenance as soon as possible (refer to limp home procedure/transmission fault) (WP 0083).

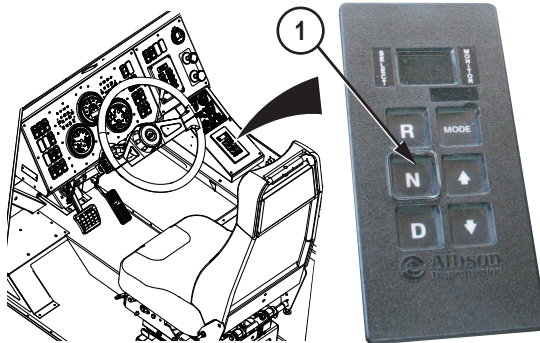
#### NOTE

- If transmission oil is below 19°F (-7°C) when D (drive) is selected, the only gears available are R (reverse), N (neutral), and 2 (second gear range). The remaining gears in D (drive) will not be available until transmission oil in sump warms above 19°F (-7°C).
- Transmission range selector has six buttons and digital display indicator. The six buttons are: R (reverse), N (neutral), D (drive), up arrow, down arrow, and MODE. The transmission has seven forward gears.
- MODE button located on transmission range selector does not perform any operator function.
- Digital display indicator located on transmission range selector will display R (reverse), N (neutral), or the number 1 through 7 depending on gear range selected.
- The lowest gear of any gear range is always first gear.
- When transmission range selector is set to D (drive), 2 (second gear range) is automatically chosen and displayed in the digital display indicator.

**ENGAGE NEUTRAL - Continued**

- When engine brake is activated (WP 0046) and HET Tractor is decelerating, 2 (second gear range) will be displayed in the digital display indicator.

Press N (neutral) button (1) to start engine (WP 0045), park vehicle, or operate winches (WP 0058).

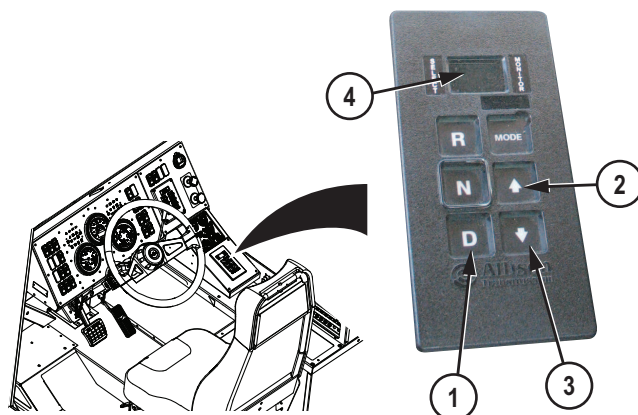


*Figure 1. Transmission Range Selector (Neutral).*

**END OF TASK****ENGAGE DRIVE****NOTE**

When setting a new transmission operating range, the top gear of the desired operating range will be displayed on digital display indicator.

1. Press D (drive) button (1) to drive in normal conditions or drive HET Tractor forward from a stop.

**ENGAGE DRIVE - Continued**

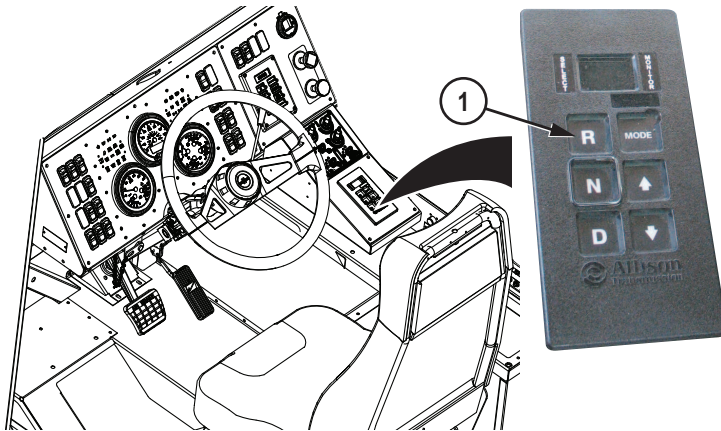
*Figure 2. Transmission Range Selector (Drive).*

**NOTE**

- Once the arrow buttons are used, the transmission will not upshift past gear range displayed on digital display indicator, but will downshift normally.
  - Pressing D (drive) button will return transmission to normal function (using all gears).
2. Use up arrow button (2) or down arrow button (3) to adjust digital display indicator (4) until top gear of desired transmission operating range is displayed.
  3. Use 4 (fourth), 3 (third), or 2 (second) gear range to drive HET Tractor in off-road conditions, in city traffic, and on highway, haul a heavy load, drive down moderate grades, or drive in other conditions as needed.
  4. Use 1 (first gear range) when maximum pulling power is required, to drive HET Tractor up/down steep grade or in slippery conditions.

**END OF TASK****ENGAGE REVERSE**

Press R (reverse) button (1) to drive HET Tractor backward.

**ENGAGE REVERSE - Continued**

*Figure 3. Transmission Range Selector (Reverse).*

**END OF TASK****CHECK TRANSMISSION OIL LEVEL****NOTE**

- The digital display indicator on the transmission range selector can be used to check the transmission oil level sensor (OLS) for a more accurate transmission oil level reading than possible with transmission dipstick.
- Only use transmission oil dipstick to check oil level if transmission oil temperature is below 140° F (60° C). In those conditions, use the COLD band on the transmission dipstick to conduct a cold check to determine if there is enough fluid to start and move the HET Tractor.
- The OLS can detect a range of oil levels from 4.22 qt (4 L) low to 3.17 qt (3 L) high, displayed as LO4 and HI3.

To check transmission oil level:

- a. Apply parking brake. (WP 0049)
- b. Start engine. (WP 0045)
- c. Ensure transmission is in N (neutral) position. (WP 0064)

CHECK TRANSMISSION OIL LEVEL - Continued

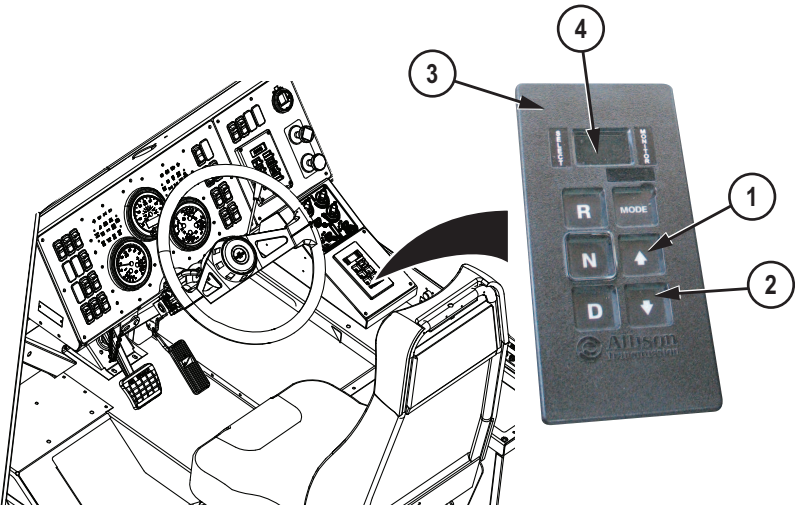


Figure 4. Check Transmission Oil Level.

- d. Press and release the up arrow button (1) and down arrow button (2) on the transmission range selector (3) at the same time to enter the oil level reading mode.
- e. The transmission range selector (3) digital display indicator (4) will show the oil level by sequentially flashing information two characters at a time.

**Table 1. Correct Fluid Level Displays.**

First Character Pair	Second Character Pair	Description
o L	o K	Oil level (o L) within correct oil level zone (o K)

**Table 2. Incorrect Fluid Level Displays.**

First Character Pair	Second Character Pair	Third Character Pair	Description
o L	L o	o 2	Oil level (o L) is low (L o) by displayed number of quarts (o 2)

CHECK TRANSMISSION OIL LEVEL - Continued

*Table 2. Incorrect Fluid Level Displays - Continued.*

First Character Pair	Second Character Pair	Third Character Pair	Description
o L	H I	o 2	Oil level (o L) is high (H I) by displayed number of quarts (o 2)

*Table 3. Invalid for Display Codes.*

First Character Pair	Second Character Pair	Third Character Pair	Description
o L	--	o X	Setting time too short
o L	--	E L	Engine rpm too low
o L	--	E H	Engine rpm too high
o L	--	S N	N (Neutral) must be selected
o L	--	T L	Sump oil temperature too low
o L	--	T H	Sump oil temperature too high
o L	--	S H	Output shaft rotation
o L	--	F L	Sensor failure

END OF TASK

MONITOR TRANSMISSION OIL LIFE

**NOTE**

- The transmission oil life monitor mode (OM) alerts the operator when a transmission oil change is required, based on the HET A1 Tractor's duty cycle (operating hours, mileage, temperature and other factors).

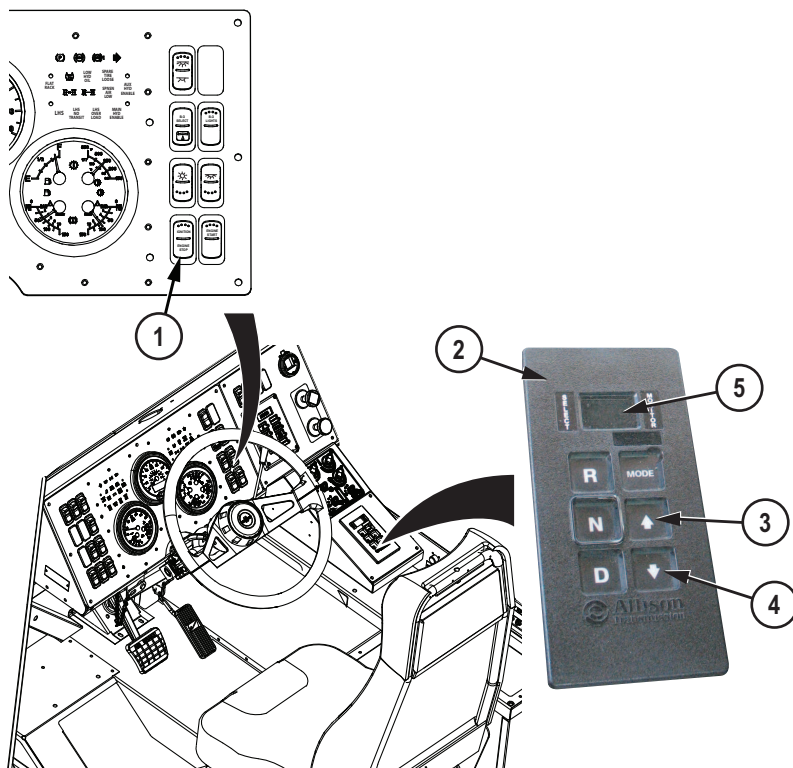


**MONITOR TRANSMISSION OIL LIFE - Continued**

- Transmission oil life is measured and displayed as percent of life remaining, from 99 percent to 1 percent.
- Transmission oil life is automatically monitored with no required input from the operator. When transmission oil reaches 1 percent of useful life, a wrench icon will illuminate on the transmission range selector.
- After the first appearance of the wrench icon, each time the engine is started and D (drive) is selected, the wrench icon illuminates for two minutes to remind the operator that a transmission oil change is needed.
- If transmission oil service is not performed before the transmission oil life reaches zero, the Check Transmission indicator on the main instrument panel will illuminate until service is performed and the OM is reset to 99 percent.

To manually check transmission oil life:

- a. Apply parking brake. (WP 0049)
- b. Push IGNITION/ENGINE STOP switch (1) up to IGNITION position.
- c. Push the transmission range selector (2) up arrow button (3) and down arrow button (4) together twice to enter OM mode.

**MONITOR TRANSMISSION OIL LIFE - Continued**

*Figure 5. Monitor Transmission Oil Life.*

- d. Read the percentage of oil life remaining on the transmission range selector (2) digital display (5).

**END OF TASK****MONITOR TRANSMISSION FILTER LIFE****NOTE**

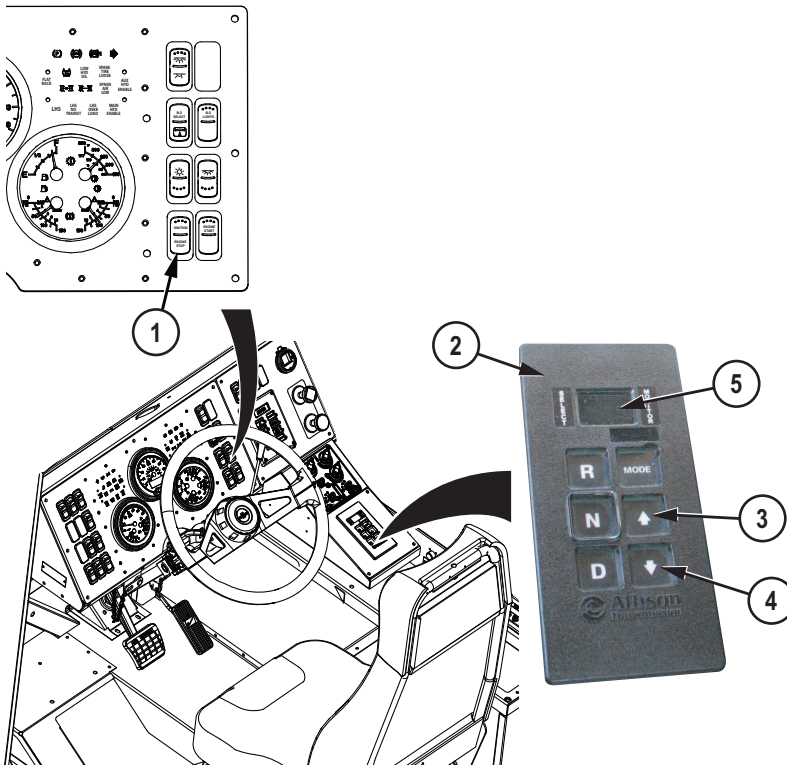
- The transmission filter life monitor mode (FM) alerts the operator when the transmission's oil filters need to be replaced, based on sensors reading the pressure differential between oil entering the filters and oil exiting the filters.

**MONITOR TRANSMISSION FILTER LIFE - Continued**

- Transmission oil filter life is automatically monitored with no required input from the operator. When the pressure differential reaches a pre-determined level, a wrench icon will illuminate on the transmission range selector.
- After the first appearance of the wrench icon, each time the engine is started and D (drive) is selected, the wrench icon flashes for two minutes to remind the operator that a transmission oil filter change is needed.
- Transmission filter life monitor automatically resets after new filters are installed and the pressure differential sensors detect pressures are back within the pre-determined range.

To manually check transmission oil filter condition:

- a. Apply parking brake. (WP 0049)
- b. Push IGNITION/ENGINE STOP switch (1) up to IGNITION position.

**MONITOR TRANSMISSION FILTER LIFE - Continued**

*Figure 6. Monitor Transmission Filter Life.*

- c. Push the transmission range selector (2) up arrow button (3) and down arrow button (4) together three times to enter FM mode.
- d. Read the transmission filter condition on the transmission range selector (2) digital display (5): a display of "oK" indicates filters do not need to be changed, a display of "Lo" indicates that filters should be changed.

**END OF TASK**

**MONITOR TRANSMISSION HEALTH****NOTE**

- The transmission health monitor mode (TM) is a prognostic feature that alerts the operator when transmission clutches need maintenance, based on monitoring of the cumulative changes and calculated running clearance of transmission clutches.
- If any transmission clutch reaches a remaining life of 10 percent or if clutch running clearances exceed a maximum value, a wrench icon will illuminate continuously any time ignition is on.
- Transmission health monitor automatically resets when clutches are back within tolerances through replacement or adjustment.

To manually check transmission oil filter condition:

- a. Push IGNITION/ENGINE STOP switch (1) up to IGNITION position.

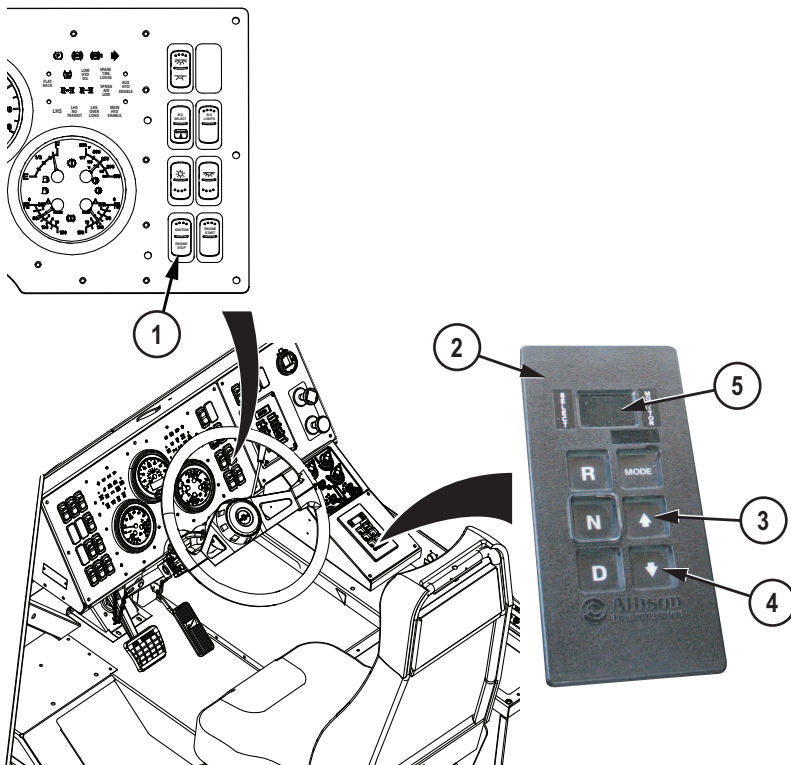


Figure 7. Monitor Transmission Health.

**MONITOR TRANSMISSION HEALTH - Continued**

- b. Push the transmission range selector (2) up arrow button (3) and down arrow button (4) together four times to enter FM mode.
- c. Read transmission health status on the transmission range selector (2) digital display (5): a display of "oK" indicates clutch system maintenance is not required, a display of "Lo" indicates clutch system needs maintenance.

**END OF TASK****END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE EXTREME HEAT OPERATION

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### INITIAL SETUP:

Not Applicable

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### CAUTION

- When operating Heavy Equipment Transporter (HET) Tractor in very hot temperatures of above 100°F (38°C), extra care must be taken to prevent overheating engine (temperatures over 230°F [110°C]) and transmission (temperatures over 300°F [149°C]). Check coolant temperature gauge and transmission oil temperature gauge frequently. Failure to comply may result in damage to equipment.
- Check oil levels (WP 0124) often and keep operating strain as low as possible. HET Tractor cooling and lubrication systems support each other. Failure of one system will rapidly cause failure of other systems.

### NOTE

Closing the heater valves disables cab heat.

1. Close heater valves (1) to improve the efficiency of cab air conditioning.

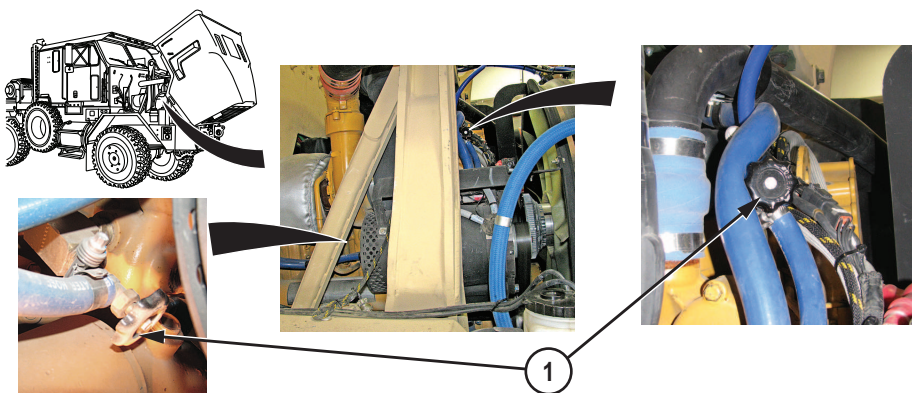


Figure 1. Extreme Heat Operation.

2. Keep operating temperatures as low as possible:
  - a. Set transmission range selector (WP 0064) (2) to N (neutral) while engine is running and HET Tractor is not required to move.

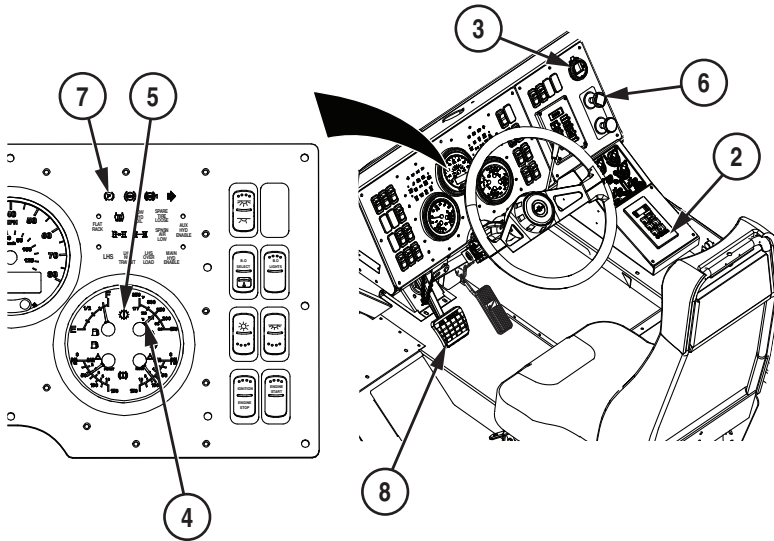


Figure 2. Extreme Heat Operation.

- b. Use low gear ranges only when necessary.
  - c. Stop HET Tractor for cooling off periods, and idle engine as often as possible. Let engine idle for approximately 3 to 5 minutes before shutting down. Idling will cool engine faster than quick shutdown and may prevent damage from remaining engine heat.
  - d. Check oil levels often. Oil seals are more likely to leak in extremely hot weather.
  - e. Check AIR FILTER RESTRICTION indicator (3) frequently. If AIR FILTER RESTRICTION indicator (3) shows red:
    - (1) Park HET Tractor.
    - (2) Shut OFF engine (WP 0050).
    - (3) Notify field level maintenance.
3. If transmission oil temperature gauge (4) reads 300°F (149°C) or above, or check transmission indicator (5) illuminates (amber), perform the following steps:
  - a. Slow HET Tractor.
  - b. Set transmission range selector (WP 0064) (2) to next lower gear range.
  - c. Continue operation.



- d. When transmission oil temperature gauge (4) reads normal range.
    - (1) Set transmission range selector (WP 0064) (2) to normal gear range.
    - (2) Continue operation.
  - e. If transmission oil temperature gauge (4) does not return to normal range:
    - (1) Stop HET Tractor.
    - (2) Set transmission range selector (WP 0064) (2) to N (neutral).
    - (3) Pull out PARKING BRAKE control (WP 0049) (6) to apply parking brakes. Parking brake indicator (7) will illuminate (red).
    - (4) Allow transmission to cool.
  - f. When transmission oil temperature gauge (4) reads normal range:
    - (1) Apply service brake pedal (WP 0047) (8).
    - (2) Push in PARKING BRAKE control (WP 0049) (6) to release parking brakes. Parking brake indicator (7) will go out.
    - (3) Set transmission range selector (WP 0064) (2) to normal gear range.
    - (4) Continue operation.
4. If coolant temperature gauge (9) indicates coolant temperature is near overheating, perform the following steps:

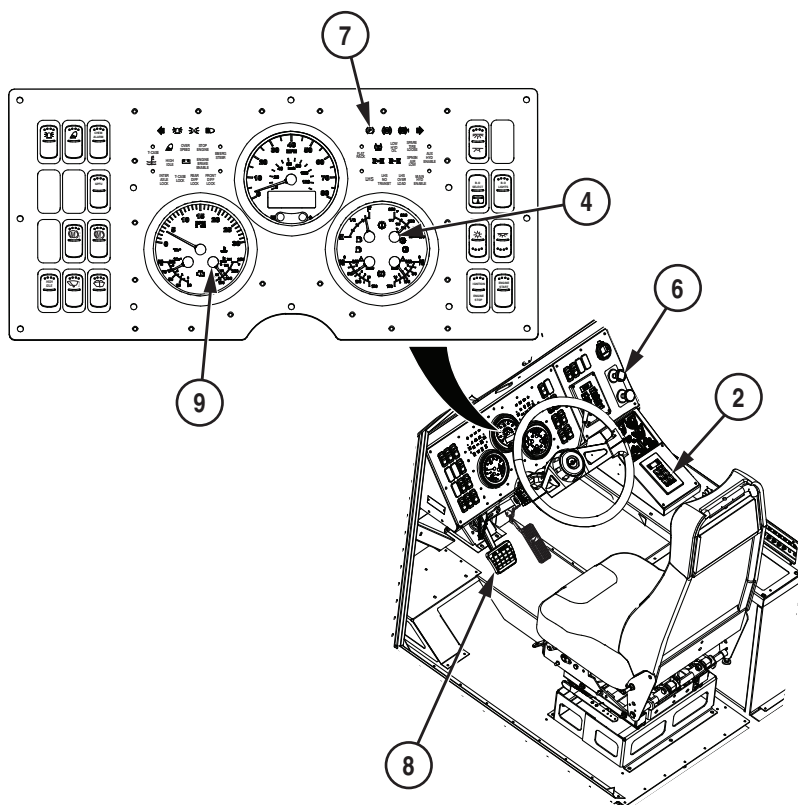


Figure 3. Extreme Heat Operation.

- a. Slow HET Tractor.
- b. Set transmission range selector (WP 0064) (2) to next lower gear range.
- c. Continue operation.
- d. When transmission oil temperature gauge (4) reads normal range.
  - (1) Set transmission range selector (WP 0064) (2) to normal gear range.
  - (2) Continue operation.
- e. If coolant temperature gauge (9) does not return to normal range:
  - (1) Stop HET Tractor.
  - (2) Set transmission range selector (WP 0064) (2) to N (neutral).
  - (3) Pull out PARKING BRAKE control (WP 0049) (6) to apply parking brakes. Parking brake indicator (7) will illuminate (red).
  - (4) Allow engine to cool.

- f. When coolant temperature gauge (9) reads normal range:
  - (1) Apply service brake pedal (WP 0047) (8).
  - (2) Push in PARKING BRAKE control (WP 0049) (6) to release parking brakes. Parking brake indicator (7) will go out.
  - (3) Set transmission range selector (WP 0064) (2) to normal gear range.
  - (4) Continue operation.
- 5. Check cooling system often and notify field level maintenance if any of the following are found:
  - a. Low coolant level in radiator.
  - b. Leaking hose connections which have been tightened but still leak.
  - c. Cracked or leaking hoses.
  - d. Radiator or charge air cooler fins/grill plugged with mud, debris, etc.

### NOTE

Batteries do not hold charge well in extreme heat.

- 6. Check charging system often.
- 7. In hot, damp climates, check body and chassis often and notify field level maintenance if any of the following are found:
  - a. Signs of pitting or paint blistering on metal surfaces.
  - b. Signs of mildew, mold, or fungus on fabrics and rubber.
- 8. Adjust lubrication intervals as specified in applicable Lubrication Instructions. (WP 0124)

**END OF TASK**

**END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE EXTREME DUST OPERATION

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### INITIAL SETUP:

Not Applicable

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### OPERATE VEHICLE IN EXTREME DUST

#### CAUTION

Blowing dust can scratch glass surfaces on Heavy Equipment Transporter (HET) Tractor. Keep glass surfaces covered with tarpaulin as much as possible in these conditions to prevent scratching. Failure to comply may result in damage to equipment.

#### NOTE

Take extra care when cleaning glass to prevent scratching.

1. Leave glass surfaces covered if not needed for operations.
2. Check AIR FILTER RESTRICTION indicator (1) frequently. Shut OFF engine (WP 0050) immediately when yellow indicator reads in the red area (over 20 in. of water) of gauge.

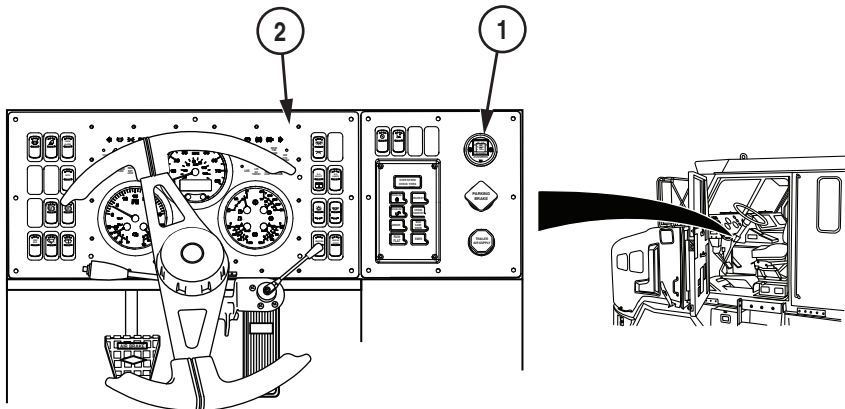


Figure 1. Operation in Extreme Dust.

**OPERATE VEHICLE IN EXTREME DUST - Continued**

3. Check other gauges and indicator lights on main instrument panel (WP 0026) (2) to ensure dust does not affect equipment.

**NOTE**

At stops, check and drain fuel filter if water is present in bowl.

4. Allow as much distance as possible between vehicles, and operate at low speeds to reduce impaired vision, vehicle overheating, or possible clogging of air filter.
5. Park HET Tractor so it does not face into wind, when possible, to prevent sand and dust from damaging vehicle.
6. Cover air intake, radiator, and cab with tarpaulin during extended shutdown.

**END OF TASK****END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE OPERATION ON STEEP GRADES

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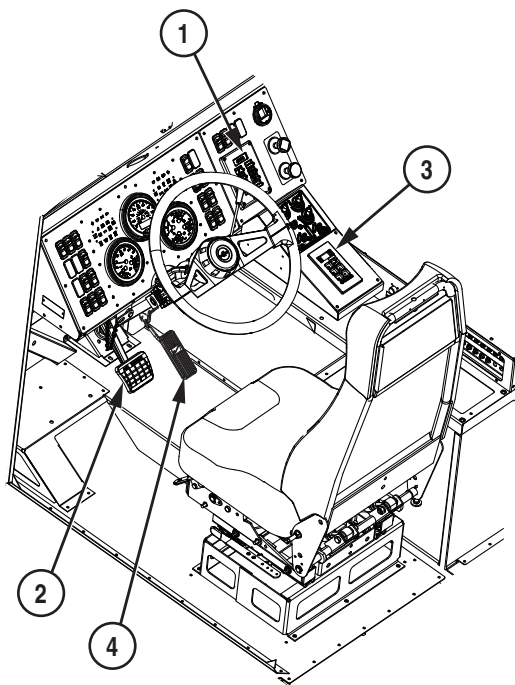
### INITIAL SETUP:

Not Applicable

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### DRIVING UP MODERATE TO STEEP GRADES

1. Check CTIS controller (WP 0052) (1) to ensure load and terrain settings match terrain conditions.



*Figure 1. Driving Up Moderate to Steep Grades.*

2. Apply service brake pedal (WP 0047) (2) and set transmission range selector (WP 0064) (3) to:
  - a. 1 (first gear range) if encountering an extreme grade (greater than 13 percent).

**DRIVING UP MODERATE TO STEEP GRADES - Continued**

- b. Any other gear range if climbing moderate grade (less than 13 percent). Any gear range selections are acceptable: transmission will shift to proper gear range, as needed. Check CTIS controller (WP 0052) often to ensure Heavy Equipment Transporter (HET) Tractor speed does not exceed CTIS setting.

**NOTE**

Traction Control and CTIS-controlled driveline locks are designed to control wheel slippage procedures. If wheels begin slipping, refer to the wheel slippage procedures below.

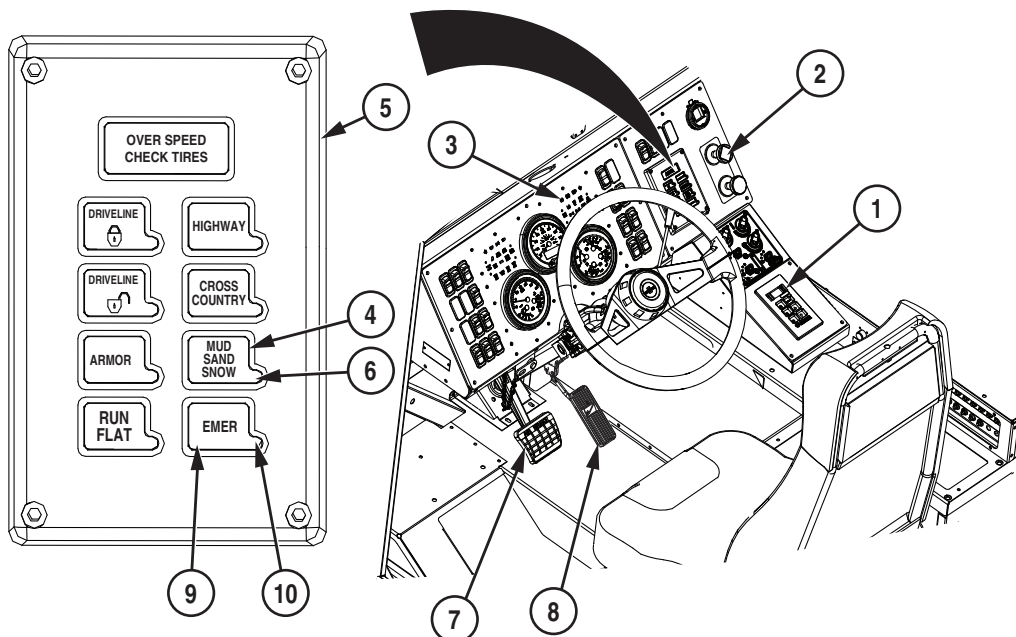
3. Release service brake pedal (WP 0047) (2) and proceed up grade, gradually applying throttle pedal (4) as traction allows.
4. After reaching the top of grade:
  - a. Stop HET Tractor.
  - b. Set transmission range selector (WP 0064) (3) to appropriate gear range for terrain.
  - c. Set CTIS controller (WP 0052) (1) to appropriate load and terrain settings to match terrain conditions.

**WHEEL SLIPPAGE PROCEDURES**

If wheel slippage is encountered while driving up steep grade perform the following:

1. Stop HET Tractor.
2. Set transmission range selector (WP 0064) (1) to N (neutral).



**WHEEL SLIPPAGE PROCEDURES - Continued**

*Figure 2. Wheel Slippage Procedures.*

3. Pull out PARKING BRAKE control (WP 0049) (2) to apply parking brakes. Parking brake indicator (3) will illuminate (red).
4. Press MUD SAND SNOW button/indicator (4) on CTIS controller (5). MUD SAND SNOW indicator (6) will flash (green).

**NOTE**

Allow time for CTIS adjustment. MUD SAND SNOW indicator on CTIS controller will flash (green) to indicate CTIS is checking and adjusting tire pressures and driveline lockups. MUD SAND SNOW indicator will illuminate continuous (green) when tire pressures and driveline lockups are properly set.

5. When MUD SAND SNOW indicator (6) illuminates (green):
  - a. Apply service brake pedal (WP 0047) (7).
  - b. Set transmission range selector (WP 0064) (1) to appropriate gear range.
  - c. Push in PARKING BRAKE control (WP 0049) (2) to release parking brakes. Parking brake indicator (3) will go out.

**WHEEL SLIPPAGE PROCEDURES - Continued**

- d. Gradually apply throttle pedal (8) and release service brake pedal (WP 0047) (7) as traction allows.

**NOTE**

- If wheels start to slip, perform Step (6).
- If traction is maintained, skip to Step (12).

6. Stop HET Tractor.
7. Set transmission range selector (WP 0064) (1) to N (neutral).
8. Pull out PARKING BRAKE control (WP 0049) (2) to apply parking brakes. Parking brake indicator (3) will illuminate (red).

**CAUTION**

- When using CTIS EMER (emergency) mode, top speed should not exceed 5 mph (8 km/h) and distance traveled should not exceed 5 miles (8 km). Failure to comply may result in damage to equipment.
- Use care in driving as steering response is limited due to full driveline lockup in CTIS EMER (emergency) mode. Failure to comply may result in damage to equipment.

9. Press EMER (emergency) button/indicator (9) on CTIS controller (5).

**NOTE**

Allow time for CTIS adjustment. EMER (emergency indicator on CTIS controller will flash (green) to indicate CTIS is checking and adjusting tire pressures and driveline lockups. EMER (emergency indicator will illuminate continuous (green) when tire pressures and driveline lockups are properly set.

10. When EMER (emergency indicator (10) illuminates (green):
  - a. Apply service brake pedal (WP 0047) (7).
  - b. Set transmission range selector (WP 0064) (1) to appropriate gear range.
  - c. Push in PARKING BRAKE control (WP 0049) (2) to release parking brakes. Parking brake indicator (3) will go out.
11. Gradually apply throttle pedal (8) and release service brake pedal (WP 0047) (7) as traction allows.
12. After reaching the top of the grade, stop HET Tractor:
  - a. Set transmission range selector (WP 0064) (1) to appropriate gear range for terrain.

**WHEEL SLIPPAGE PROCEDURES - Continued**

- b. Set CTIS controller (WP 0052) (5) to appropriate terrain setting.

**DRIVING DOWN STEEP GRADES****CAUTION**

Engine brake operates best when engine speed is between 1650 and 2100 rpm. Do not allow speed to go above 2100 rpm. Failure to comply may result in damage to equipment.

1. Set transmission range selector (WP 0064) (1) to lower range as needed to keep engine speed between 1650 and 2100 rpm on tachometer (2).

**WARNING**

Repeated application of the brake pedal will deplete air supply and service brakes will not work until air pressure builds up again. Serious personal injury or death may result from loss of service brakes.

2. Apply service brake pedal (WP 0047) (3) as needed to control HET Tractor speed.

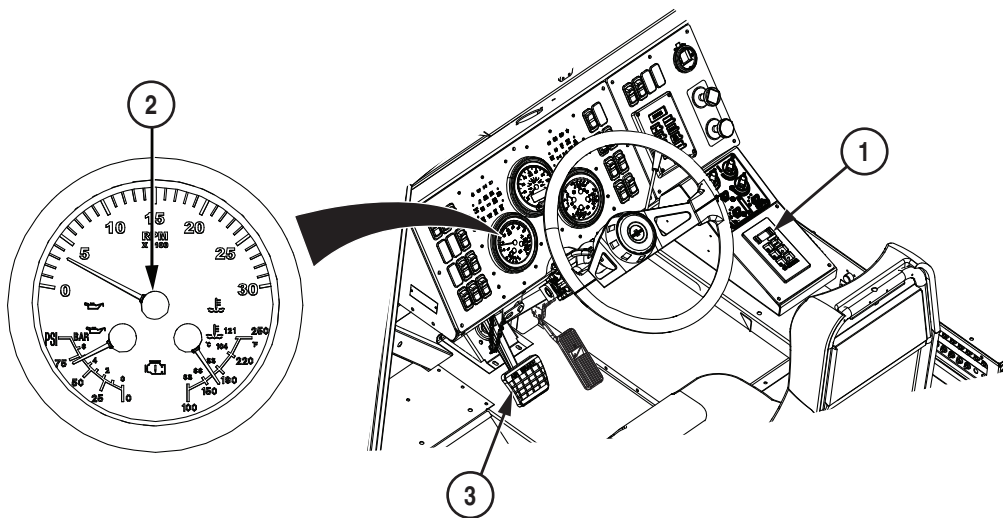


Figure 3. Driving Down Steep Grades.

**DRIVING DOWN STEEP GRADES - Continued**

3. Operate engine brake retarder (WP 0046) as required.

**END OF TASK**

**END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE OPERATION IN SAND, MUD, OR SNOW

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### INITIAL SETUP:

Not Applicable

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### OPERATION IN SAND, MUD, OR SNOW

#### WARNING

Operating in mud causes brake linings to get wet and can impair Heavy Equipment Transporter (HET) Tractor braking. If braking is impaired while operating in mud, dry brakes by driving HET Tractor about 500 ft. (152 m) while applying service brakes frequently. This must be done with brakedrums totally out of mud so that drying action can take place. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

#### CAUTION

Blowing sand may scratch glass surfaces on Heavy Equipment Transporter (HET) Tractor. Glass surfaces should remain covered as much as possible in these conditions to prevent scratching. Failure to comply may result in damage to equipment.

#### NOTE

- The best time to drive on sand is at night or early morning when sand is damp. Damp sand affords better traction.
  - Extra care should be taken when cleaning glass to prevent scratching surfaces.
  - Principles of driving in sand can also be applied to driving in mud.
1. Cover glass surfaces if not needed for operations.
  2. Check AIR FILTER RESTRICTION indicator (1) often.
    - a. Shut OFF engine (WP 0050) immediately if AIR FILTER RESTRICTION indicator (1) reads in the red zone (above 20 in. of water) of indicator.
    - b. Check all gauges and indicators on main instrument panel (WP 0026) (2) to verify dust is not affecting equipment.

## OPERATION IN SAND, MUD, OR SNOW - Continued

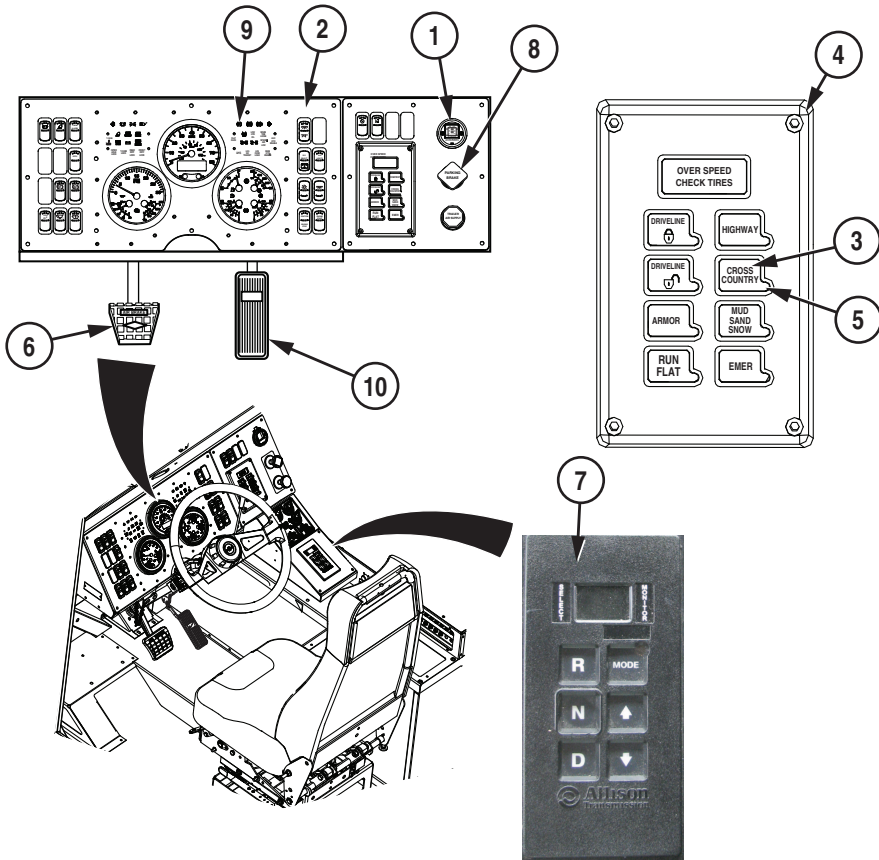


Figure 1. Operation In Sand, Mud, or Snow.

**NOTE**

Starting out in first gear range enables higher automatic driveline lock levels than starting in higher gear ranges. Manual selection of other lock levels is allowed, but only to a higher level of driveline lock than automatically selected by the current terrain setting (refer to Table 1 of Central Tire Inflation System (CTIS) Operation procedures).

3. If in HIGHWAY terrain setting, press CROSS COUNTRY button (3) on CTIS controller (WP 0052) (4).

**OPERATION IN SAND, MUD, OR SNOW - Continued****NOTE**

Allow time for CTIS adjustment. CROSS COUNTRY indicator on CTIS controller (WP 0052) will flash (green) to indicate CTIS is checking and adjusting tire pressures and driveline lockups. CROSS COUNTRY indicator will illuminate continuous (green) when tire pressures and driveline lockups are properly set.

4. When CROSS COUNTRY indicator (5) illuminates (green):
  - a. Apply service brake pedal (WP 0047) (6).
  - b. Set transmission range selector (WP 0064) (7) to 2 or 1 (second or first gear range), as needed, for added traction.
  - c. Push in PARKING BRAKE control (WP 0049) (8) to release parking brakes. Parking brake indicator (9) will go out.

**NOTE**

Exceeding 30 mph (48 km/h) in CROSS COUNTRY terrain setting will trigger an OVERSPEED warning from CTIS. If speed is not reduced within 90 seconds, CTIS will change to the appropriate mode for the current speed.

- d. Gradually apply throttle pedal (10) and release service brake pedal (WP 0047) (6) as traction allows.
5. If excess wheel spin is encountered and more traction is required, perform the following:

**NOTE**

Exceeding 30 mph (48 km/h) in driveline lock level 1 will trigger an OVERSPEED warning from CTIS. If speed or driveline lock level is not reduced within 30 seconds, CTIS will change to the appropriate mode for the current speed. Higher lock levels (2 and 3) have a maximum speed of 10 mph (16 km/h).

- a. Stop HET Tractor and press driveline lock button (11) on CTIS controller (WP 0052) (4) to enable level 1 driveline lock (interaxle lock).

## OPERATION IN SAND, MUD, OR SNOW - Continued

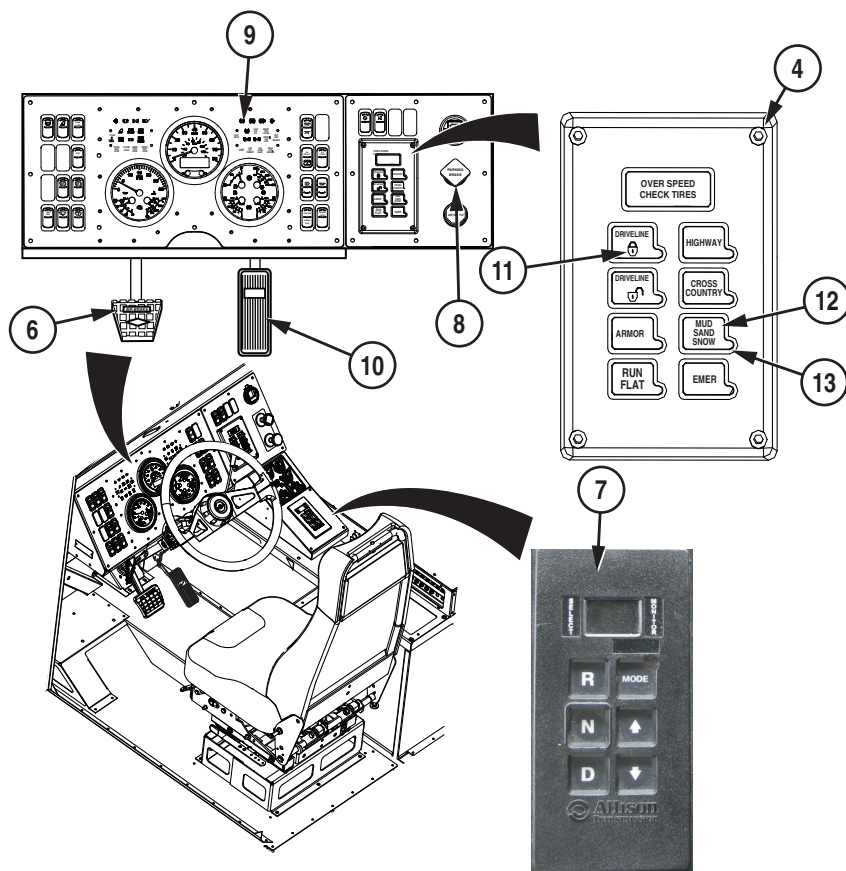


Figure 2. Operation In Sand, Mud, or Snow.

**NOTE**

Selecting MUD SAND SNOW terrain setting automatically engages level 2 driveline locks (Interaxle and Transfer Case). Maximum speed in level 2 is 10 mph (16 km/h). Exceeding 10 mph (16 km/h) will trigger an OVERSPEED warning from CTIS. If speed is not reduced within 30 seconds, CTIS will change to the appropriate mode for the current speed.

- b. If wheel spin continues, press MUD SAND SNOW button (12) on CTIS controller (WP 0052) (4).



**OPERATION IN SAND, MUD, OR SNOW - Continued****NOTE**

Allow time for CTIS adjustment. MUD SAND SNOW indicator on CTIS controller (WP 0052) will flash (green) to indicate CTIS is checking and adjusting tire pressures and driveline lockups. MUD SAND SNOW indicator will illuminate continuous (green) when tire pressures and driveline lockups are properly set.

6. When MUD SAND SNOW indicator (13) illuminates (green):
  - a. Apply service brake pedal (WP 0047) (6).
  - b. Set transmission range selector (WP 0064) (7) to 2 or 1 (second or first gear range), as needed, for added traction.
  - c. Push in PARKING BRAKE control (WP 0049) (8) to release parking brakes. Parking brake indicator (9) will go out.

**NOTE**

Exceeding 30 mph (48 km/h) in CROSS COUNTRY terrain setting will trigger an OVERSPEED warning from CTIS. If speed is not reduced within 90 seconds, CTIS will change to the appropriate mode for the current speed.

- d. Gradually apply throttle pedal (10) and release service brake pedal (WP 0047) (6) as traction allows.

**NOTE**

- Do not straddle sand mounds or drive on sides of two sand mounds. Loose sand will not support vehicle on steep slopes.
- Drive HET Tractor slowly and make slow turns when on loose sand or mud.

7. Keep throttle pedal (10) steady after vehicle reaches desired speed.

**WARNING**

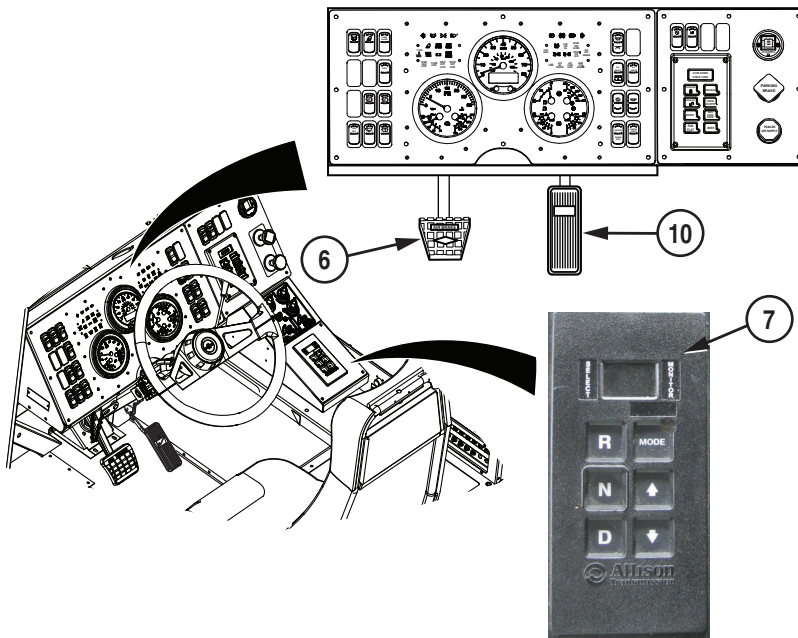
Avoid driving diagonally across a hill. Heavy Equipment Transporter (HET) Tractor may roll. Failure to comply may result in serious injury or death to personnel.

**NOTE**

Steer HET Tractor straight up and down hills when possible. When necessary to drive across a hill, choose lowest angle possible, keep HET Tractor moving, and avoid quick, sharp turns.

**OPERATION IN SAND, MUD, OR SNOW - Continued**

8. To move HET Tractor forward and turn after vehicle is stopped in loose sand or mud, perform the following:
  - a. Set transmission range selector (WP 0064) (7) to R (reverse) position.



*Figure 3. Operation In Sand, Mud, or Snow.*

- b. Gradually apply throttle pedal (10) and slowly move HET Tractor straight back about 20.0 ft. (6.1 m).
  - c. Release throttle pedal (10) and apply service brake pedal (WP 0047) (6).
  - d. Set transmission range selector (WP 0064) (7) to 1 (first gear range) position.
  - e. Release service brake pedal (WP 0047) (6) and gradually apply throttle pedal (10) to move HET Tractor forward slowly, increasing speed gradually.
  - f. Turn HET Tractor gradually to avoid oversteering.
  - g. Set transmission range selector (WP 0064) (7) to D (drive) when HET Tractor picks up speed and is moving forward smoothly.
9. If HET Tractor starts to skid, perform the following:
  - a. Release throttle pedal (10).
  - b. Steer in direction of skid until HET Tractor stops skidding.

**OPERATION IN SAND, MUD, OR SNOW - Continued**

- c. When HET Tractor is under control, lightly apply service brake pedal (WP 0047) (6).
  - d. Apply throttle pedal (10) and steer HET Tractor on straight course.
10. Park HET Tractor as follows:
- a. Whenever possible, park so HET Tractor does not face into wind to avoid radiator damage or glass surfaces being scratched by sand and dust.

**CAUTION**

- Do not hit axle breathers when cleaning mud from axles. Damage to axle breathers could result.
- Do not direct high-pressure water stream at glass surfaces, seals, air intake, axle breathers, exhaust outlet, or any other component of HET Tractor that could be easily damaged by high-pressure water stream. Failure to comply may result in damage to equipment.

**NOTE**

Ensure axle breather vent caps move freely on breather body.

- b. Clean mud off HET Tractor as soon as possible to avoid damage to paint.
- c. Clean mud from wheels, brakes, axles, universal joints, steering mechanism, and radiator as soon as possible.

**END OF TASK**

**END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE OPERATION IN DESERT ENVIRONMENT

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### INITIAL SETUP:

#### References

FM 90-3 (WP 0136)

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1. Principles of operating in extreme heat (WP 0065), operating in extreme dust (WP 0066), and operating in sand or mud (WP 0068) apply to desert environment operation.
2. Temperatures can change as much as 70°F (21°C) between day and night. These changes can damage equipment if Heavy Equipment Transporter (HET) Tractor is not properly prepared.
  - a. Due to expansion and contraction of all fluids and air, care should be taken when filling fuel tanks and fluid reservoirs to prevent overflow when temperatures change.
  - b. Precision instruments can be affected by temperature changes and may need adjustment more often.
3. Refer to (WP 0136) for detailed instructions on living and working in a desert environment.

**END OF TASK**

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE**  
**OPERATION IN COLD ENVIRONMENT, -25 TO 32°F (-32 TO 0°C)**

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**INITIAL SETUP:**

**References**

FM 9-207 (WP 0136)  
FM 31-70 (WP 0136)

**References (cont.)**

FM 31-71 (WP 0136)  
TC 21-305-20 (WP 0136)

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**Prepare HET Tractor for Operation in Cold Environment**

**WARNING**



When operating Heavy Equipment Transporter (HET) Tractor on snow or ice, be sure to remove all snow and ice from footwear, brake pedal, and accelerator pedal. Serious injury to personnel and damage to HET Tractor may result if feet slip from controls during operation.

**WARNING**

Do not touch extremely cold metal (-26 to -65°F [-32 to -54°C]). Bare skin may freeze to cold metal. Failure to comply may result in serious injury or death to personnel.

**CAUTION**

- Drain fuel filter before topping off fuel tanks. Keep fuel tanks full during cold environment operations. Water forms in empty tanks as they cool. Water in system can freeze and block fuel flow to engine. Failure to comply may result in damage to equipment.
- Special care must be used during cold environment operations. In severe cold, engine coolant and windshield washer fluid can freeze. Batteries can freeze and crack. Oil and grease may get thick and stiff. Rubber will easily crack. Failure to comply may result in damage to equipment.
- Do not force dipstick removal in cold environment. Wait 3 to 5 minutes after loosening dipstick before attempting to remove. Failure to comply may result in damage to equipment.

**Prepare HET Tractor for Operation in Cold Environment - Continued**

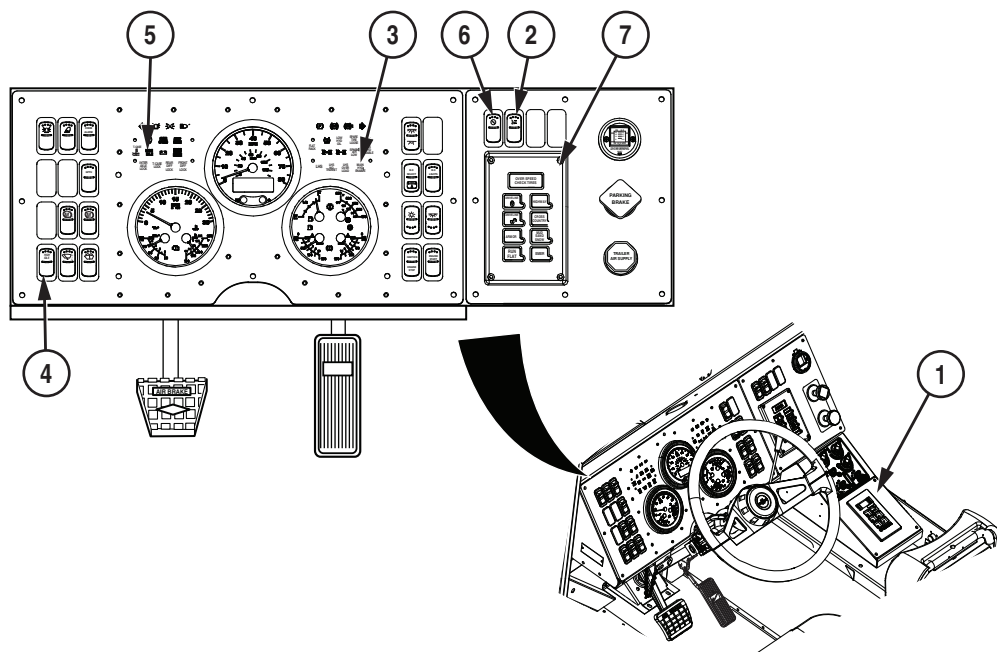
- Before operating HET Tractor in cold environment, ensure engine arctic kit is installed and prepare HET Tractor IAW (WP 0136).
  - Refer to (WP 0136), (WP 0136), and (WP 0136) for additional information on operating in cold environment. Failure to comply may result in damage to equipment.
  - Watch instrument panel closely. If any unusual readings occur, stop HET Tractor and shut off engine. Check engine immediately. Failure to comply may result in damage to equipment.
  - All snow and ice should be removed from HET Tractor as soon as possible. Snow and ice may slow or stop movement of critical parts if allowed to pile up. Failure to comply may result in damage to equipment.
  - Ensure proper component lubrication for operation in cold environment (WP 0124). Failure to comply may result in damage to equipment.
1. Install tire chains (WP 0074) (as required).
  2. Start engine (WP 0045) and allow engine warm up thoroughly before driving or operating winch system.

**CAUTION**

Whenever temperatures are below 32°F (0°C) and HET Tractor has not been driven more than 5 miles (8 km) to allow steering system to warm hydraulic oil, hydraulic oil must be warmed before using winch system. Failure to comply may result in damage to winch pump.

3. Warm up winch system before operating:
  - a. Set transmission range selector (WP 0064) (1) to N (neutral).



**Prepare HET Tractor for Operation in Cold Environment - Continued**

*Figure 1. Operation in Cold Environment.*

- b. Push winch PTO enable switch (2) up to on position. MAIN HYD ENABLE indicator (3) will illuminate (green).
- c. Operate engine at idle for 15 minutes.
- d. Push HIGH IDLE switch (4) up to on position to engage high idle for 10 minutes. HIGH IDLE indicator (5) will illuminate (green).
- e. After 10 minutes, push HIGH IDLE switch (4) down to off position. HIGH IDLE indicator (5) will go out.
- f. Complete the following for each of the three winches:
  - (1) Pay out winch cable (WP 0058) one drum revolution.
  - (2) Retrieve winch cable (WP 0058).
- g. Resume normal winch operations (WP 0058).
4. Drive HET Tractor (WP 0028) 3 to 5 miles (5 to 8 km) before activating CTIS.

**Prepare HET Tractor for Operation in Cold Environment - Continued****NOTE**

The CTIS should be on only when HET Tractor is parked during cold starts in cold environments. CTIS will adjust tire pressures during warm up period while HET Tractor is parked.

- a. Push CTIS on/off switch (6) up to CTIS off position before moving HET Tractor.
- b. Drive HET Tractor (WP 0028) 3 to 5 miles (5 to 8 km).
- c. Push CTIS on/off switch (6) down to on position.
- d. Set CTIS controller (WP 0052) (7) to appropriate terrain setting.
- e. Set transmission range selector (WP 0064) (1) to 1 (first gear range). Drive HET Tractor (WP 0028) at the lowest possible speed to warm driveline components and tires.
- f. When HET Tractor and components are warm, set transmission range selector (WP 0064) (1) to D (drive) or other gear range as required.

**END OF TASK****Drive HET Tractor on Mud, Snow, Ice, and Slippery Surfaces****WARNING**

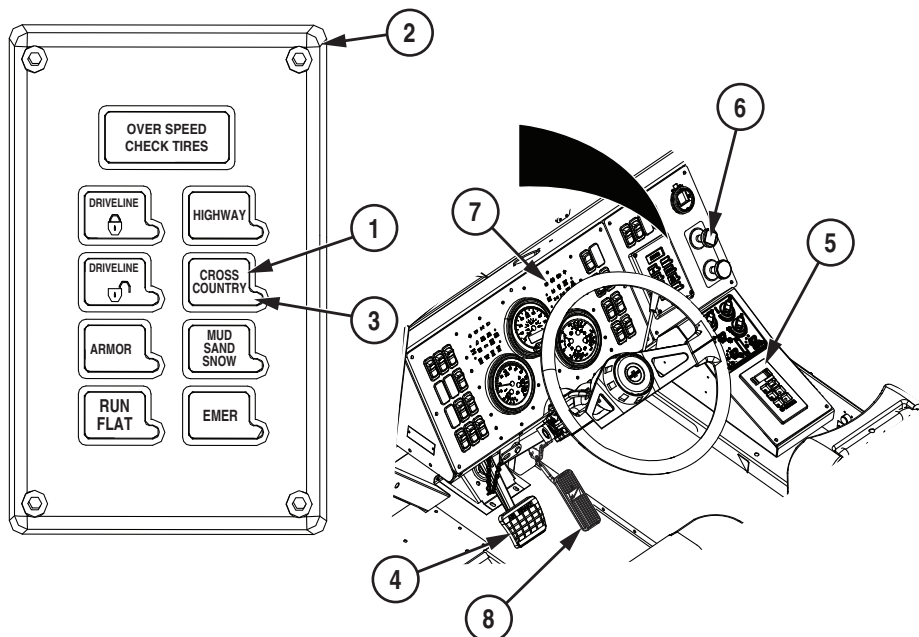
Do not use engine brake retarder in wet, slick, or icy road conditions. Loss of vehicle control could occur. Failure to comply may result in serious injury or death to personnel.

**WARNING**

Reduce speeds when operating on snow or ice or accidents resulting in damage to Heavy Equipment Transporter (HET) Tractor may occur. Provisions must be made for increased stopping distances. Failure to comply may result in serious injury or death to personnel.

Drive HET Tractor on Mud, snow, ice, and slippery surfaces as follows:

1. Press CROSS COUNTRY button/indicator (WP 0052) (1) on CTIS controller (WP 0052) (2). CROSS COUNTRY indicator (3) will flash (green).

**Drive HET Tractor on Mud, Snow, Ice, and Slippery Surfaces - Continued**

*Figure 2. Operation on Mud, Snow, Ice, and Slippery Surfaces.*

**NOTE**

Allow time for CTIS adjustment. CROSS COUNTRY indicator on CTIS controller (WP 0052) will flash (green) to indicate CTIS is checking and adjusting tire pressures and driveline lockups. CROSS COUNTRY indicator will illuminate continuous (green) when tire pressures and driveline lockups are properly set.

2. When CROSS COUNTRY indicator (3) illuminates (green):
  - a. Apply service brake pedal (WP 0047) (4).
  - b. Set transmission range selector (WP 0064) (5) to appropriate gear range.
  - c. Push in PARKING BRAKE control (WP 0049) (6) to release parking brakes. Parking brake indicator (7) will go out.
  - d. Gradually apply throttle pedal (8) and release service brake pedal (WP 0047) (4) as traction allows.
3. Turn HET Tractor slowly when operating on slippery surfaces.
4. Steer HET Tractor away from ruts and large snowbanks.
5. If possible, Steer HET Tractor straight up and down hills:

**Drive HET Tractor on Mud, Snow, Ice, and Slippery Surfaces - Continued**

- a. Set transmission range selector (WP 0064) (5) to 2 (second gear range) or 3 (third gear range) to go down medium grades.
  - b. Set transmission range selector (WP 0064) (5) to 1 (first gear range) to go down steep or very slippery grades.
6. Drive at slower speeds and stay back twice normal distance from vehicle ahead.
  7. Signal turns (WP 0041) sooner than normal to give vehicles behind ample time to safely slow down.

**WARNING**

Do not pump brakes in slippery conditions. The HET A1 Tractor has an Anti-Lock Brake System (ABS). ABS automatically pulses brakes, helping maintain steering and slowing the HET A1 Tractor in a controlled manner. Failure to comply may result in loss of control and serious injury or death to personnel.

8. Apply service brakes (WP 0047) sooner, and tap service brake pedal (WP 0047) (4) lightly to give early warning (brake lights) that HET Tractor is about to slow or stop.
9. Set transmission range selector (WP 0064) (5) to a lower gear range if necessary, when slowing or stopping HET Tractor on slick surfaces.
10. Keep windshield, windows, mirrors, headlights, stoplights, and marker lights clean and free of snow and ice. Use defroster and windshield wipers to keep windshield free of snow and ice.
11. Drive slowly and test service brake operation (WP 0047) after driving through slush or water. If service brakes slip, complete the following:
  - a. Continue to drive slowly.
  - b. Apply moderate pressure on service brake pedal (WP 0047) (4) to cause slight brake drag.
  - c. When brakes are dry and no longer slip, release service brake pedal (WP 0047) (4).
  - d. Resume normal driving speed for conditions.
12. If HET Tractor starts to skid:
  - a. Release throttle pedal (8).
  - b. Steer in direction of skid until HET Tractor stops skidding.
  - c. Apply service brake pedal (WP 0047) (4) lightly when HET Tractor is under control.
  - d. Apply throttle pedal (8) slowly. Steer HET Tractor on straight course.

## Drive HET Tractor on Mud, Snow, Ice, and Slippery Surfaces - Continued

13. If HET Tractor starts to slide while climbing hill:
  - a. Release throttle pedal (8).
  - b. Steer in direction of slide until HET Tractor stops.
  - c. Apply throttle pedal (8) slowly. Steer HET Tractor on straight course.

## END OF TASK

### HET Tractor Tires Start to Spin (Lose Traction) excessively or HET Tractor Becomes Stuck

Complete the following if HET Tractor tires lose traction or HET Tractor becomes stuck:

1. Stop HET Tractor.
2. Set transmission range selector (WP 0064) (1) to N (neutral).

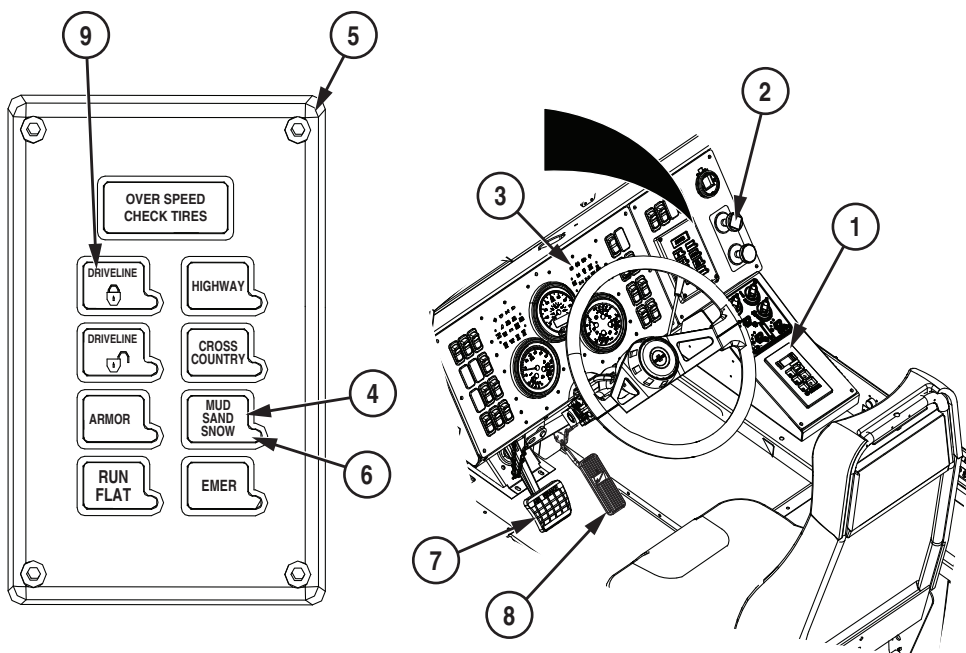


Figure 3. Operation with Traction Loss.

3. Pull out PARKING BRAKE control (WP 0049) (2) to apply parking brakes. Parking brake indicator (3) will illuminate (red).

## **HET Tractor Tires Start to Spin (Lose Traction) excessively or HET Tractor Becomes Stuck - Continued**

### **NOTE**

- If HET Tractor is stuck, shovel clear path ahead of each wheel. Place boards, brush, mats, canvas, or similar material in cleared paths to get better tire traction.
  - Selecting MUD SAND SNOW (WP 0052) terrain setting automatically selects Level 2 driveline lock (interaxle and transfer case locks). Driveline lock setting can be increased to maximum lock Level 3 (interaxle, transfer case and intra-axle locks) by pressing the driveline lock button on the CTIS controller.
4. Press MUD SAND SNOW button/indicator (WP 0052) (4) on CTIS controller (WP 0052) (5). MUD SAND SNOW indicator (6) will flash (green).

### **NOTE**

Allow time for CTIS adjustment. MUD SAND SNOW indicator on CTIS controller (WP 0052) will flash (green) to indicate CTIS is checking and adjusting tire pressures and driveline lockups. MUD SAND SNOW indicator will illuminate continuous (green) when tire pressures and driveline lockups are properly set.

5. When MUD SAND SNOW indicator (6) illuminates (green):
- a. Apply service brake pedal (WP 0047) (7).
  - b. Set transmission range selector (WP 0064) (1) to appropriate gear range:  
If HET Tractor is stuck, use 1 (first gear range).
  - c. Push in PARKING BRAKE control (WP 0049) (2) to release parking brakes. Parking brake indicator (3) will go out.
  - d. Gradually apply throttle pedal (8) and release service brake pedal (WP 0047) (7) as traction allows.
  - e. For additional traction, add driveline lock levels using the driveline lock button (WP 0052) (9) on the CTIS controller (WP 0052) (5) or set transmission range selector (WP 0064) (1) to a lower gear range.

## HET Tractor Tires Start to Spin (Lose Traction) excessively or HET Tractor Becomes Stuck - Continued

### WARNING



When operating Heavy Equipment Transporter (HET) Tractor on snow or ice, be sure to remove all snow and ice from footwear, brake pedal, and accelerator pedal. Serious injury to personnel and damage to HET Tractor may result if feet slip from controls during operation.

- f. Keep throttle pedal (8) steady after HET Tractor reaches desired speed.

### END OF TASK

### HET Tractor Remains Stuck and/or Requires Maximum Traction

Complete the following if HET Tractor remains stuck and/or requires maximum traction:

1. Stop HET Tractor.
2. Set transmission range selector (WP 0064) (1) to N (neutral).

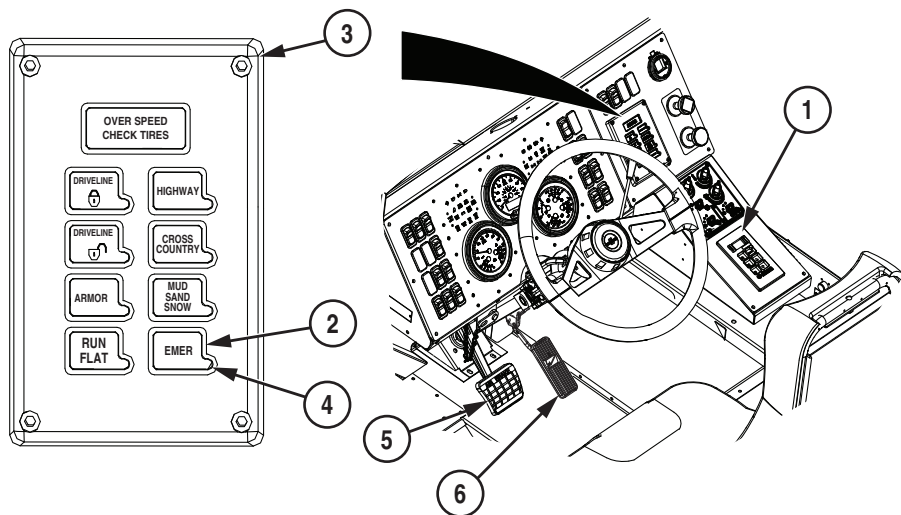


Figure 4. Operation for Maximum Traction.

**HET Tractor Remains Stuck and/or Requires Maximum Traction - Continued****CAUTION**

- When using CTIS EMERGENCY mode, top speed should not exceed 5 mph (8 km/h) and distance traveled should not exceed 5 miles (8 km). Failure to comply may result in damage to equipment.
- Use care in driving as steering response is limited due to full driveline lockup in CTIS EMERGENCY mode. Failure to comply may result in damage to equipment.

**NOTE**

Selecting EMER (emergency) terrain setting (WP 0052) on CTIS controller (WP 0052) along with second gear range on transmission range selector (WP 0064) engages driveline lock level 2 (interaxle and transfer case lock).

3. Press EMER (emergency) button/indicator (WP 0052) (2) on CTIS controller (WP 0052) (3).

**NOTE**

Allow time for CTIS adjustment. EMER (emergency) indicator on CTIS controller (WP 0052) will flash (green) to indicate CTIS is checking and adjusting tire pressures and driveline lockups. EMER (emergency) indicator will illuminate continuous (green) when tire pressures and driveline lockups are properly set.

4. When EMER (emergency) indicator (4) illuminates (green):
  - a. Apply service brake pedal (WP 0047) (5).

**NOTE**

Selecting CTIS EMERGENCY mode automatically selects Level 2 driveline lock (interaxle and transfer case locks). Driveline lock setting can be increased to maximum lock Level 3 (interaxle, transfer case, and intra-axle locks) by setting the transmission range selector (WP 0064) to 1 (first gear range).

- b. Set transmission range selector (WP 0064) (1) to appropriate gear range.

If HET Tractor is stuck, use 1 (first gear range).
5. Gradually apply throttle pedal (6) and release service brake pedal (WP 0047) (5) as traction allows.



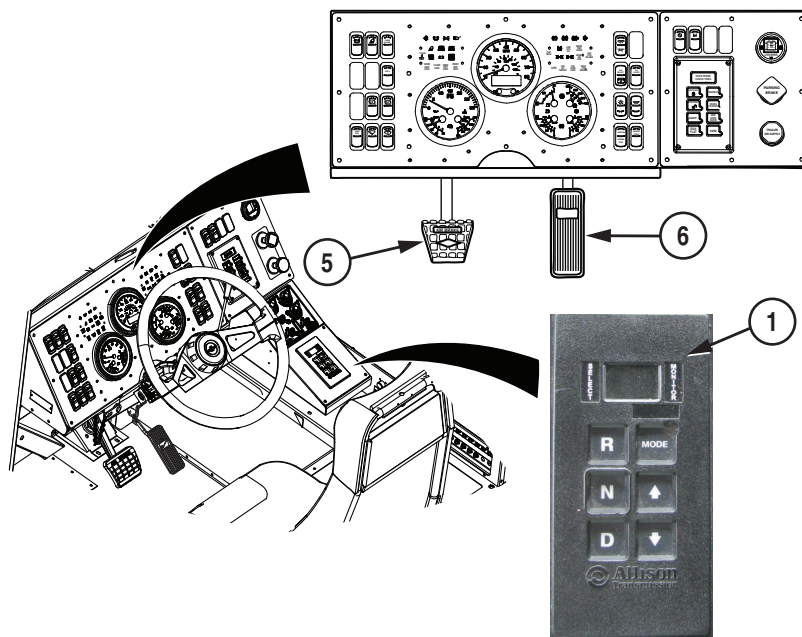
**HET Tractor Remains Stuck and/or Requires Maximum Traction - Continued****WARNING**

Avoid driving diagonally across a hill. Heavy Equipment Transporter (HET) Tractor may roll. Failure to comply may result in serious injury or death to personnel.

**NOTE**

Steer HET Tractor straight up and down hills when possible. When necessary to drive across a hill, choose lowest angle possible, keep HET Tractor moving, and avoid quick, sharp turns.

6. To move HET Tractor forward and turn after vehicle is stopped in loose sand or mud, perform the following:
  - a. Set transmission range selector (WP 0064) (1) to R (reverse) position.



*Figure 5. Operation In Sand, Mud, or Snow.*

- b. Gradually apply throttle pedal (6) and slowly move HET Tractor straight back about 20.0 ft. (6.1 m).
  - c. Release throttle pedal (6) and apply service brake pedal (WP 0047) (5).
  - d. Set transmission range selector (WP 0064) (1) to 1 (first gear range) position.

**HET Tractor Remains Stuck and/or Requires Maximum Traction - Continued**

- e. Release service brake pedal (WP 0047) (5) and gradually apply throttle pedal (6) to move HET Tractor forward slowly, increasing speed gradually.
  - f. Turn HET Tractor gradually to avoid oversteering.
  - g. Set transmission range selector (WP 0064) (1) to D (drive) when HET Tractor picks up speed and is moving forward smoothly.
7. If HET Tractor remains stuck, use another vehicle to recover.

**END OF TASK****Park HET Tractor in Cold Environment****CAUTION**

Park in shelter when possible. If shelter is not available, park so HET Tractor does not face into wind. Place planks or brush under wheels so HET Tractor will not freeze in place. Failure to comply may result in damage to equipment.

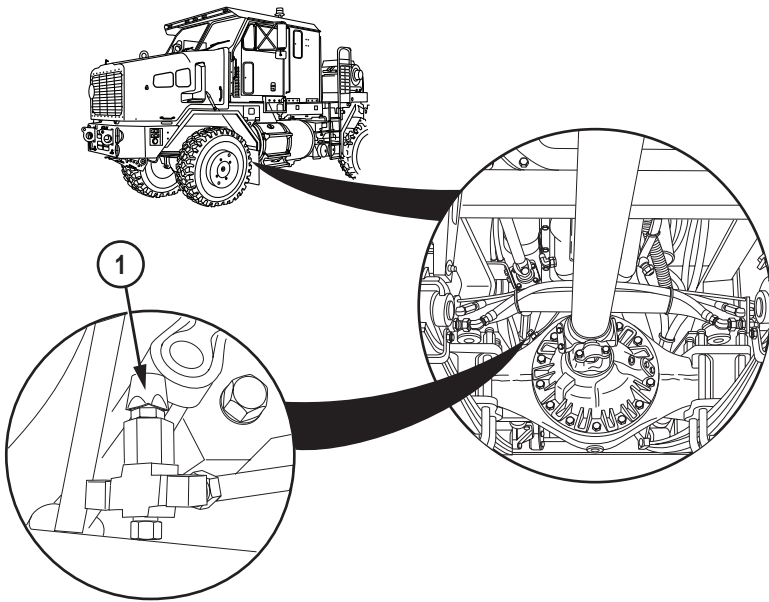
Park the HET Tractor in a cold environment as follows:

- 1. When possible, park HET Tractor so it does not face into wind.
- 2. Park HET Tractor on dry ground when possible. If dry ground is not available, place wood planks, brush, mats, or canvas under tires.

**NOTE**

Do not apply parking brake in extremely cold weather. Brake shoes can freeze to brake drum. Ensure HET Tractor is parked on level terrain and wheel chocks are installed (WP 0036).

- 3. Park HET Tractor on level ground.
- 4. Ensure axle breather vent caps (1) move freely on breather body.

**Park HET Tractor in Cold Environment - Continued**

*Figure 6. Parking in Cold Environment.*

**CAUTION**

Do not hit axle breathers when cleaning mud, snow, and ice from axles. Damage to axle breathers could result.

5. Clean mud, snow, and ice from wheels, brakes, axles, universal joints, mirrors, steering mechanism, and radiator as soon as possible. Ensure all components are thoroughly dry after cleaning.

**END OF TASK**

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE**  
**OPERATION IN EXTREMELY COLD ENVIRONMENT, -50 TO -26°F (-46 TO -32°C)**

---

**INITIAL SETUP:**

**References**

FM 9-207 (WP 0136)  
FM 31-70 (WP 0136)

**References (cont.)**

FM 31-71 (WP 0136)  
TC 21-305-20 (WP 0136)

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**WARNING**

Do not touch extremely cold metal (-26 to -65°F [-32 to -54°C]). Bare skin may freeze to cold metal. Failure to comply may result in serious injury or death to personnel.

**CAUTION**

- Drain fuel/water separator before topping off fuel tanks. Keep fuel tanks full during cold environment operations. Water forms in empty tanks as they cool. Water in system can freeze and block fuel flow to engine. Failure to comply may result in damage to equipment.
- Special care must be used during cold environment operations. In severe cold, engine coolant and windshield washer fluid can freeze. Batteries can freeze and crack. Oil and grease may get thick and stiff. Rubber will easily crack. Failure to comply may result in damage to equipment.
- Do not force dipstick removal in cold environment. Wait 3 to 5 minutes after loosening dipstick before attempting to remove. Failure to comply may result in damage to equipment.
- Before operating Heavy Equipment Transporter (HET) Tractor in extremely cold environment, ensure M12 EMI engine arctic kit is installed and prepare HET Tractor IAW (WP 0136).
- Refer to (WP 0136) (WP 0136) and (WP 0136) for additional information on operating in extremely cold environment. Failure to comply may result in damage to equipment.
- Watch instrument panel closely. If any unusual readings occur, stop HET Tractor and shut off engine. Check engine immediately. Failure to comply may result in damage to equipment.

- Park in shelter when possible. If shelter is not available, park so HET Tractor does not face into wind. Place planks or brush under wheels so HET Tractor will not freeze in place. Failure to comply may result in damage to equipment.
  - All snow and ice should be removed from HET Tractor as soon as possible. Snow and ice may slow or stop movement of critical parts if allowed to pile up. Failure to comply may result in damage to equipment.
  - Proper component lubrication is a must for operation in extreme cold environment. Failure to comply may result in damage to equipment.
1. Principles of operating in cold environment (WP 0070) apply to extreme cold environment.
  2. Idle engine rather than shutting it down during short stops.

**END OF TASK**

**END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE OPERATION IN FOREST OR UNEVEN TERRAIN

---

### INITIAL SETUP:

Not Applicable

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### WARNING

Avoid driving diagonally across a hill. Heavy Equipment Transporter (HET) Tractor may roll. Failure to comply may result in serious injury or death to personnel.

1. Set CTIS controller to appropriate terrain setting for conditions. (WP 0052)

### CAUTION

Ensure Heavy Equipment Transporter (HET) Tractor can clear ground obstructions, such as stumps and large rocks, before driving over obstruction. Stumps and rocks can damage components underneath HET Tractor.

2. Avoid driving over ground obstructions when possible.
3. Fold side mirrors in far enough so area to rear of HET Tractor can still be seen, but mirrors will not be damaged by rocks, trees, and other obstructions.

### CAUTION

Ensure HET Tractor can clear overhanging tree limbs and other obstructions. Failure to comply may cause low overhead obstructions to damage parts on top of HET Tractor.

4. Avoid low overhanging obstructions if possible.
5. Steer HET Tractor straight up and down hills when possible. When necessary to drive across a hill:
  - a. Choose lowest angle possible.
  - b. Keep HET Tractor moving.
  - c. Avoid quick, sharp turns.
  - d. Driver Side fuel shutoff valve should be closed while driving across hill when driver side of HET Tractor is higher than passenger side.

- e. Check tire traction and braking. Rocks and fallen leaves can be very slippery, especially when wet.
- f. Ensure spare tire and wheel are in good condition when driving over rocky terrain. Tire punctures are more likely to occur when operating on rocky terrain.

**END OF TASK**

**END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE FORD WATER OBSTACLE

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### INITIAL SETUP:

Not Applicable

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### CAUTION

- Do not ford water unless depth is known. Fording water deeper than 28 in. (71 cm) will cause equipment damage.
- Towing a semitrailer or trailer may affect maximum fording depth (refer to applicable semitrailer/trailer operators manual). Do not ford water obstacle deeper than maximum depth allowed by either Heavy Equipment Transporter (HET) Tractor or semitrailer/trailer (whichever depth is less). Failure to comply may result in damage to equipment.

### NOTE

- Ensure HET Tractor is operating correctly before entering water.
  - If service brakes have been used heavily and are hot, allow drums and shoes to cool before entering water, if possible.
1. Stop HET Tractor at edge of water obstacle and check fording site:
    - a. Ensure depth of water is not deeper than 28 in. (71 cm).
    - b. Ensure bottom of fording site is firm enough so that HET Tractor will not become stuck.
  2. Push CTIS on/off switch (WP 0052) (1) down to on position.

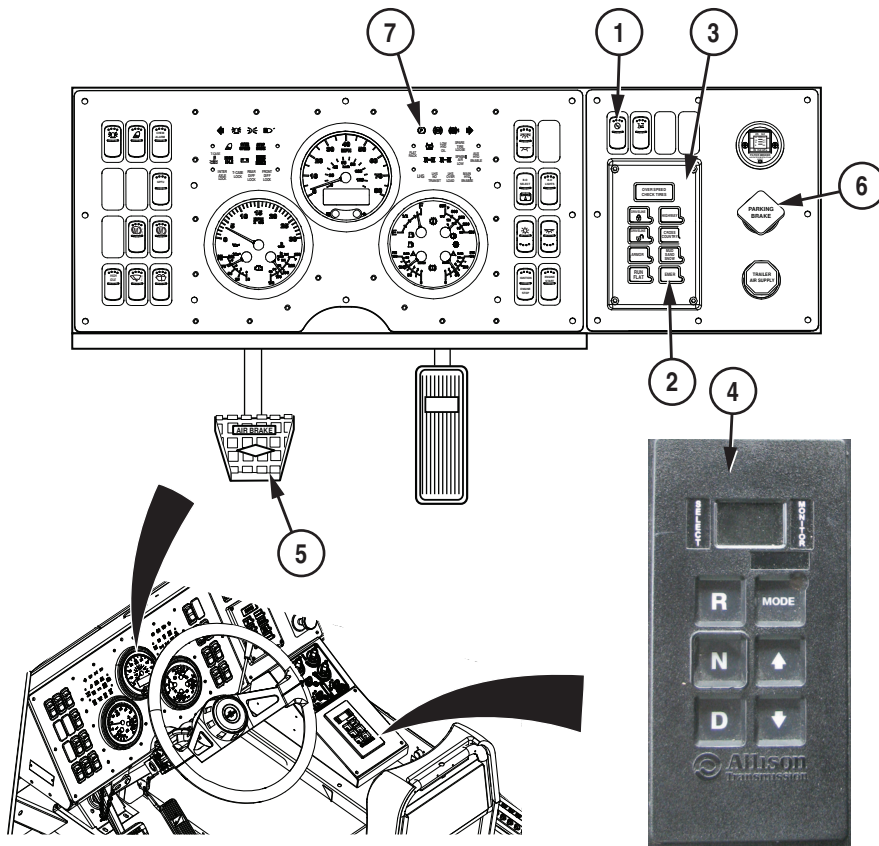


Figure 1. Ford Water Obstacle.

## CAUTION

- When using CTIS EMER (emergency) mode, top speed should not exceed 5 mph (8 km/h) and distance traveled should not exceed 5 miles (8 km). Failure to comply may result in damage to equipment.
- Use care in driving as steering response is limited due to full driveline lockup in CTIS EMER (emergency) mode. Failure to comply may result in damage to equipment.

## NOTE

Selecting EMER (emergency) terrain setting (WP 0052) on CTIS controller along with second gear range on transmission range selector (WP 0064) engages driveline lock level 2 (interaxle and transfer case lock).

3. Press EMER (emergency) button/indicator (2) on CTIS controller (3).

## NOTE

Allow time for CTIS adjustment. EMER (emergency) indicator on CTIS controller (WP 0052) will flash (green) to indicate CTIS is checking and adjusting tire pressures and driveline lockups. EMER (emergency) indicator will illuminate continuous (green) when tire pressures and driveline lockups are properly set.

4. When EMER (emergency) indicator (4) illuminates (green):
  - a. Apply service brake pedal (WP 0047) (5).
  - b. Set transmission range selector (WP 0064) (4) to 2 (second gear range).
  - c. Push in PARKING BRAKE control (WP 0049) (6) to release parking brakes. Parking brake indicator (7) will go out.

## CAUTION

Limit HET Tractor speed to 3 or 4 mph (5 or 6 km/h) during fording operations. Failure to comply may result in damage to equipment.

5. Drive HET Tractor slowly into water. Keep speed steady while fording water. Do not stop HET Tractor unless absolutely necessary.
6. If engine stops, immediately attempt to restart engine. (WP 0045) If engine will not start, tow or winch HET Tractor from water with another vehicle as soon as possible.
7. If HET Tractor accidentally enters water deeper than 28 in. (71 cm):
  - a. Apply service brake pedal (WP 0047) (5) until HET Tractor stops completely.
  - b. Set transmission range selector (WP 0064) (4) to R (reverse).
  - c. Slowly release service brake pedal (WP 0047) (5) and back HET Tractor out of deep water.

## WARNING

Do not rely on service brakes after fording water. Wet brakes may not stop Heavy Equipment Transporter (HET) Tractor. Failure to comply may result in serious injury or death to personnel.

8. After leaving water, apply service brake pedal (WP 0047) (5) lightly and hold while driving slowly to dry out brake linings.
9. Stop HET Tractor when clear of fording area.
10. Apply and release PARKING BRAKE control (WP 0049) (6) several times to remove water from brake components.
11. Set CTIS controller (3) to appropriate load and terrain settings. (WP 0052)

**CAUTION**

Salt water is corrosive and will damage HET Tractor parts that it contacts. HET Tractor parts that come in contact with salt water must be washed. Failure to comply may result in damage to equipment.

**NOTE**

After vehicle fords water obstacle, service all lubrication points below fording depth and check submerged gearboxes for presence of water upon return from mission (refer to lubrication instructions (WP 0124) for more information).

12. Remove water and clean foreign deposits from all HET Tractor parts as soon as possible.
13. Deliver HET Tractor to field level maintenance as soon as possible.

**END OF TASK**

**END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE TIRE CHAINS INSTALLATION/REMOVAL

---

### INITIAL SETUP:

#### Personnel Required

Operator and Assistant - - (2)

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### INSTALL TIRE CHAINS

#### WARNING

Do not back up Heavy Equipment Transporter (HET) Tractor without a ground guide. The location of the ground guide must be known at all times. Failure to comply may result in serious injury or death to personnel.

#### CAUTION

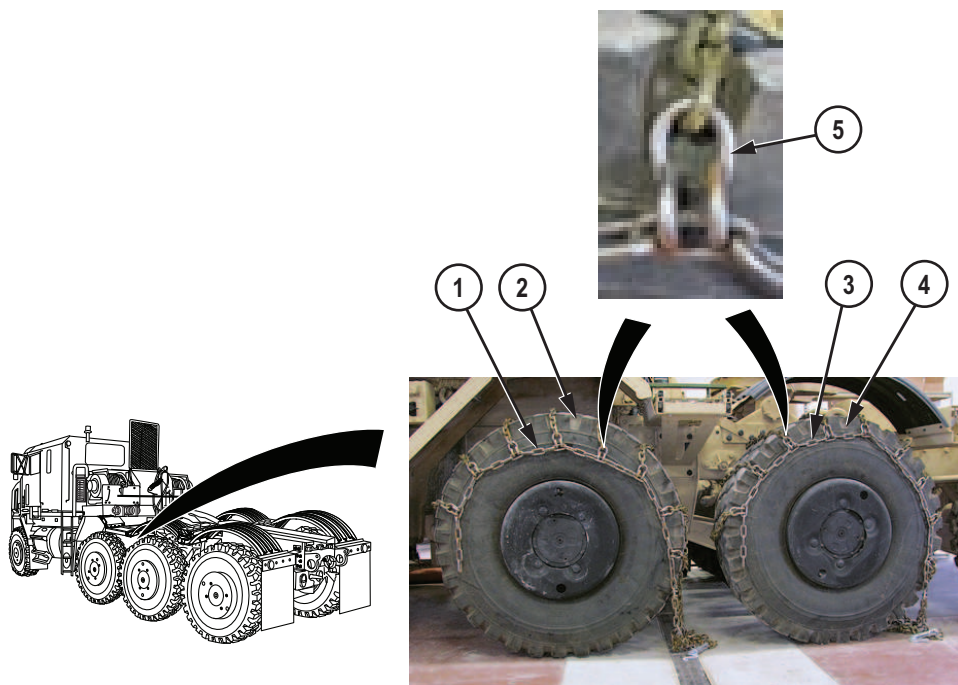
- Use tire chains on axles No. 2 and No. 3 only. Tire chains must not be used when driving on hard surfaces where there is no wheel slippage. Improper use of tire chains may result in severe equipment damage.
- DO NOT operate Heavy Equipment Transporter (HET) Tractor in MUD, SAND, SNOW or EMERGENCY settings of Central Tire Inflation System (CTIS) (WP 0052) with tire chains installed. Failure to comply may result in damage to equipment.
- The maximum speed limit for HET Tractor with tire chains installed is 10 mph (16 km/h) on highway and 15 mph (24 km/h) off highway. Traveling above the maximum speed may result in damage to equipment.

#### NOTE

- Installation of tire chains requires two crew members.
- Operator may choose to install tire chains one tire at a time, both axle No. 2 and No. 3 tires on one side (shown), or all four tires at once.
- Installation of tire chains is the same for all tires on axles No. 2 and No. 3. Driver side axles No. 2 and No. 3 tires shown.
- If installing multiple tires chains at once, ensure tire chains are evenly draped over each tire.

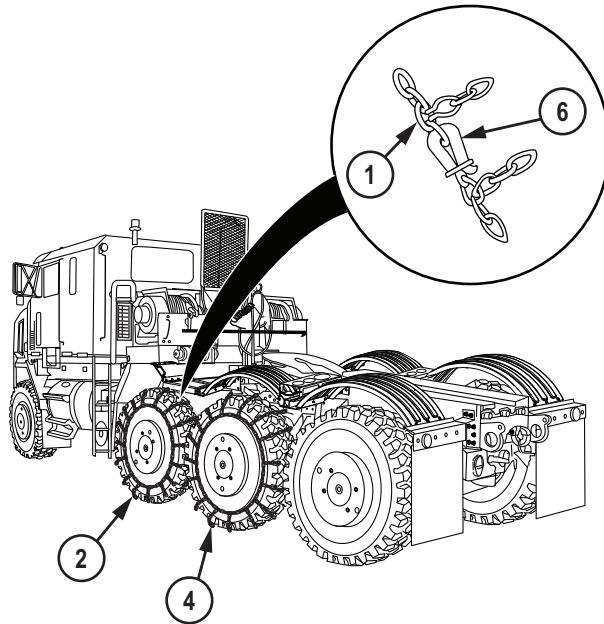
**INSTALL TIRE CHAINS - Continued**

1. Drape tire chain (1) over axle No. 2 tire (2) and tire chain (3) over axle No. 3 tire (4) with cross chain connecting links (5) facing down and excess tire chain hanging toward rear of HET Tractor.



*Figure 1. Install Tire Chains.*

2. Start engine. (WP 0045)
3. Slowly drive HET Tractor forward until tire chains (1 and 3) encircle tires (2 and 4). (WP 0047)
4. Shut OFF engine. (WP 0050)
5. Wrap excess tire chain (1) around axle No. 2 tire (2).
6. Connect and secure inside and outside clamps (6) so tire chain (1) is as tight as possible on axle No. 2 tire (2).

**INSTALL TIRE CHAINS - Continued**

*Figure 2. Install Tire Chains.*

7. Repeat Steps (5) and (6) for axle No. 3 tire (4).
8. Repeat Steps (1) through (7) for opposite side axle No. 2 and No. 3 tires.

**REMOVE TIRE CHAINS****NOTE**

- The removal of tire chains requires two crew members.
- The removal of tire chains is the same for all tires on axles No. 2 and No. 3 (axle No. 2 driver side shown).

1. Start engine (WP 0045).
2. Set transmission range selector (WP 0064) (1) to D (drive).

## REMOVE TIRE CHAINS - Continued

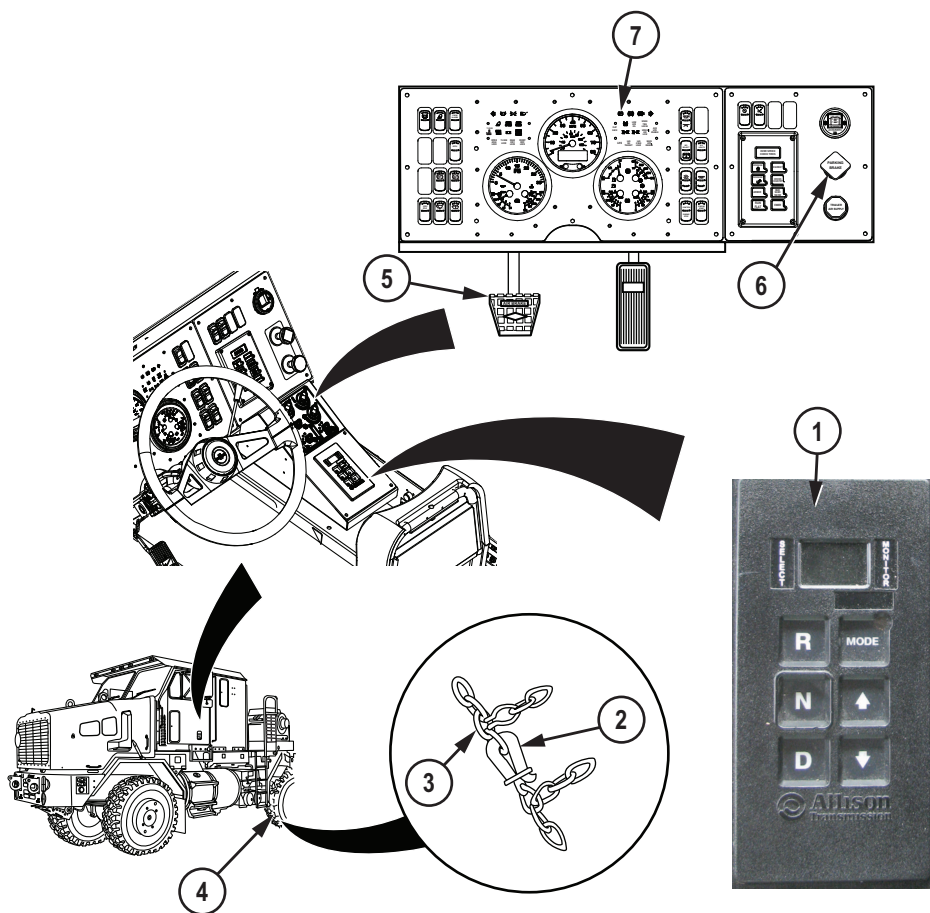
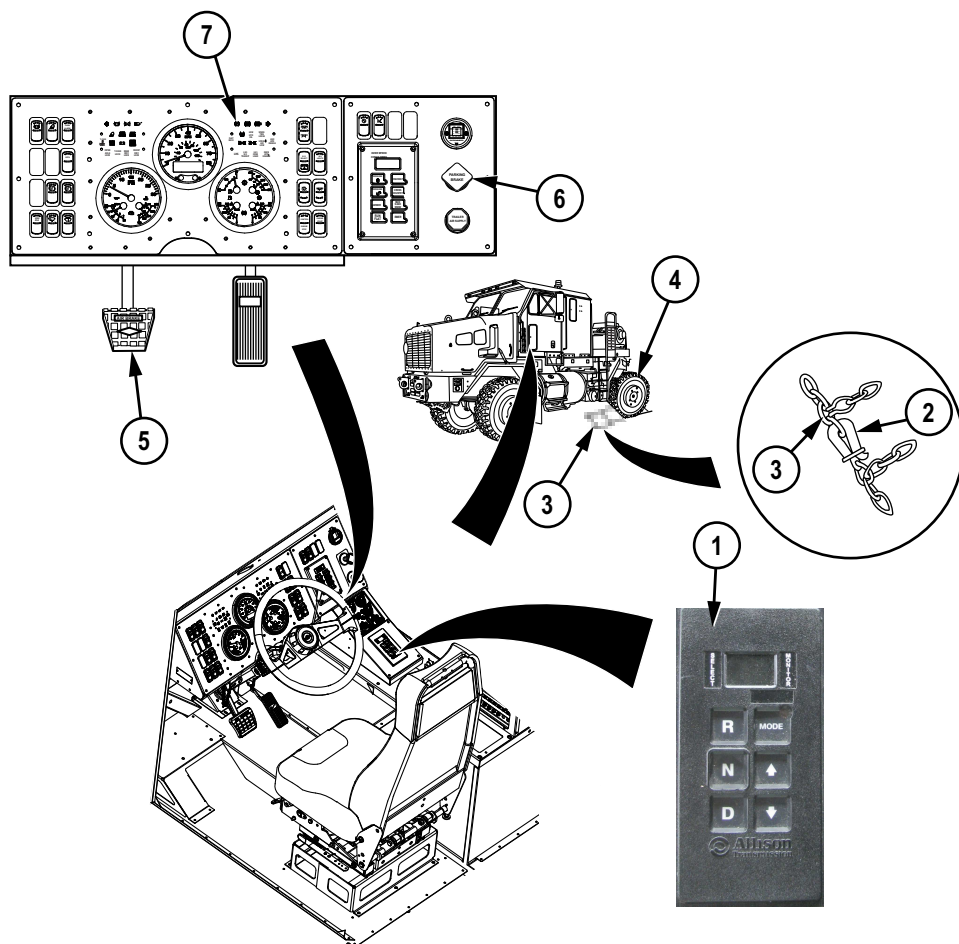


Figure 3. Remove Tire Chains.

3. Move HET Tractor ahead until clamps (2) on tire chain (3) are positioned toward front of tire (4).
4. Apply service brake pedal (WP 0047) (5).
5. Set transmission range selector (WP 0064) (1) to N (neutral).
6. Pull out PARKING BRAKE control (WP 0049) (6) to apply parking brakes. Parking brake indicator (7) will illuminate (red).
7. Shut OFF engine (WP 0050).
8. Disconnect inside and outside clamps (2) on tire chain (3).



**REMOVE TIRE CHAINS - Continued**

*Figure 4. Remove Tire Chains.*

9. Unwrap tire chain (3) from tire (4) and lay tire chain (3) on ground behind tire (4).
10. Start engine (WP 0045).
11. Set transmission range selector (WP 0064) (1) to D (drive).
12. Push in PARKING BRAKE control (WP 0049) (6) to release parking brakes. Parking brake indicator (7) will go out.
13. Move HET Tractor forward until tire (4) is off tire chain (3).
14. Apply service brake pedal (WP 0047) (5).

**REMOVE TIRE CHAINS - Continued**

15. Set transmission range selector (WP 0064) (1) to N (neutral).
16. Pull out PARKING BRAKE control (WP 0049) (6) to apply parking brakes. Parking brake indicator (7) will illuminate (red).
17. Remove tire chains from remaining three tires by repeating Steps (3) through (16).
18. Shut OFF engine (WP 0050).

**END OF TASK****END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE CONNECT/DISCONNECT TOW BAR

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### INITIAL SETUP:

#### Personnel Required

Operator and Assistant - - - (6)

#### Equipment Condition

Wheels chocked (on disabled Heavy Equipment Transporter (HET) Tractor). (WP 0036)

Parking brake applied (towing and towed vehicle). (WP 0049)

---

### TOW BAR CONNECTION

#### WARNING



Towing vehicle and disabled vehicle must have parking brakes applied, and disabled vehicle must have wheels chocked before connecting tow bar. Injury or death may result if vehicles roll into each other while personnel are making tow bar connections.

#### NOTE

Tow bar can be connected to front or rear of HET Tractor. Procedure for connecting tow bar is same for front or rear. Front shown.

1. Position towing vehicle (1) near front of disabled HET Tractor (2).

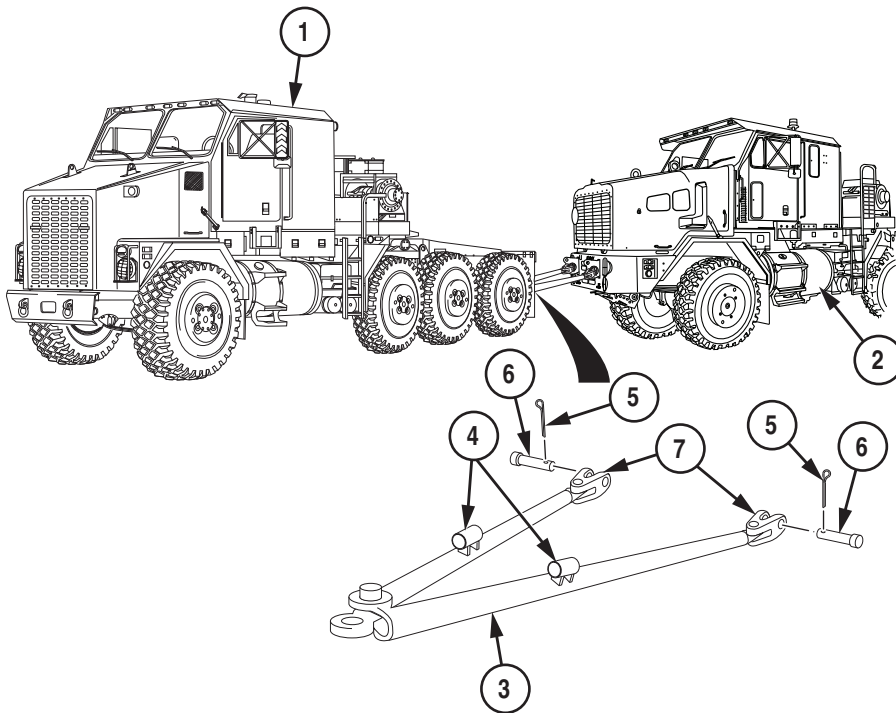
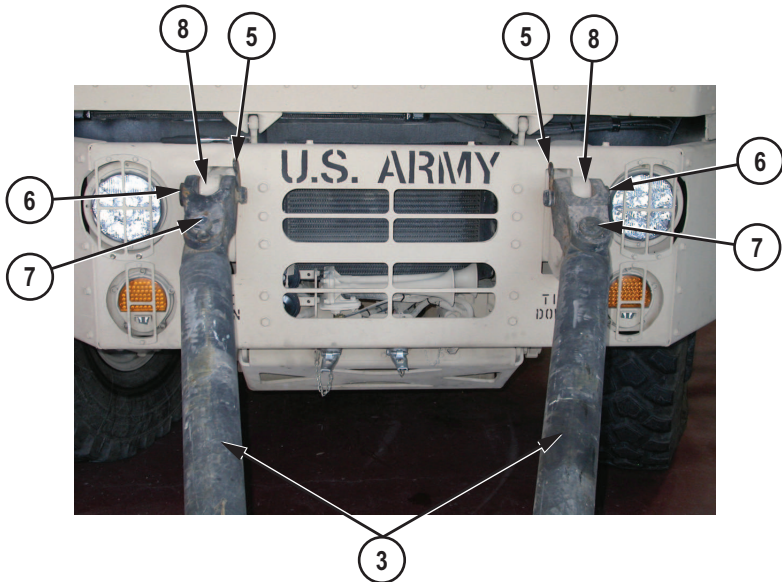
**TOW BAR CONNECTION - Continued**

Figure 1. Tow Bar Connection.

**WARNING**

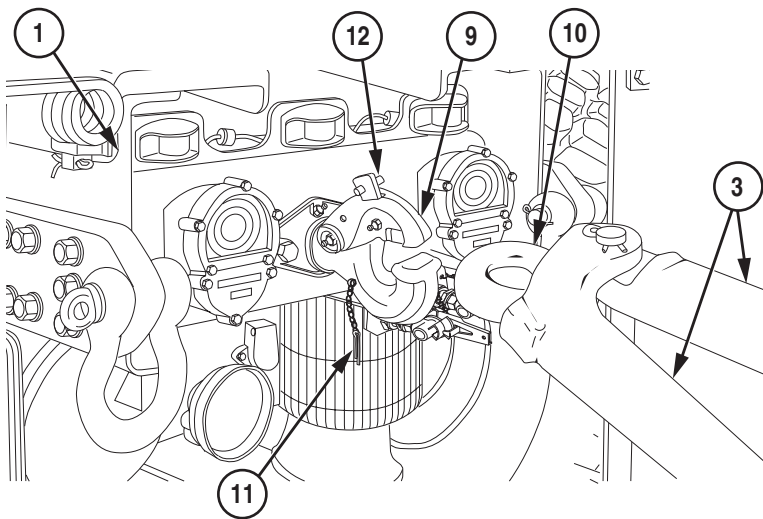
Tow bar is heavy and requires four people to carry. Do not drop tow bar. Failure to comply may result in serious injury or death to personnel.

2. With the aid of assistants, obtain tow bar (3) from field level maintenance.
3. With the aid of assistants, position legs of tow bar (3) in front of disabled HET Tractor (2) with spare pin holders (4) facing up.
4. Remove two cotter pins (5) from pins (6), and remove pins (6) from two tow bar shackles (7).
5. With the aid of assistants, lift legs of tow bar (3), align tow bar shackles (7) with tow eyes (8), and install one pin (6) through each tow bar shackle (7) and tow eye (8).

**TOW BAR CONNECTION - Continued**

*Figure 2. Tow Bar Connection.*

6. Install two cotter pins (5) in pins (6).
7. Position towing vehicle (1) so pintle hook (9) is aligned with tow bar lunette eye (10).



*Figure 3. Tow Bar Connection.*

**TOW BAR CONNECTION - Continued**

8. Remove cotter pin (11) from pintle hook (9).
9. Pull pintle hook latch (12) away from towing vehicle (1) and hold.
10. Lift top of pintle hook (9) and let go of pintle hook latch (12). Pintle hook (9) will be locked open.

**WARNING**

Do not put hands near pintle hook while aligning lunette eye with pintle hook. Towing vehicle could move suddenly. Failure to comply may result in serious injury or death to personnel.

**WARNING**

Do not move towing vehicle without assistance of ground guide.

**WARNING**

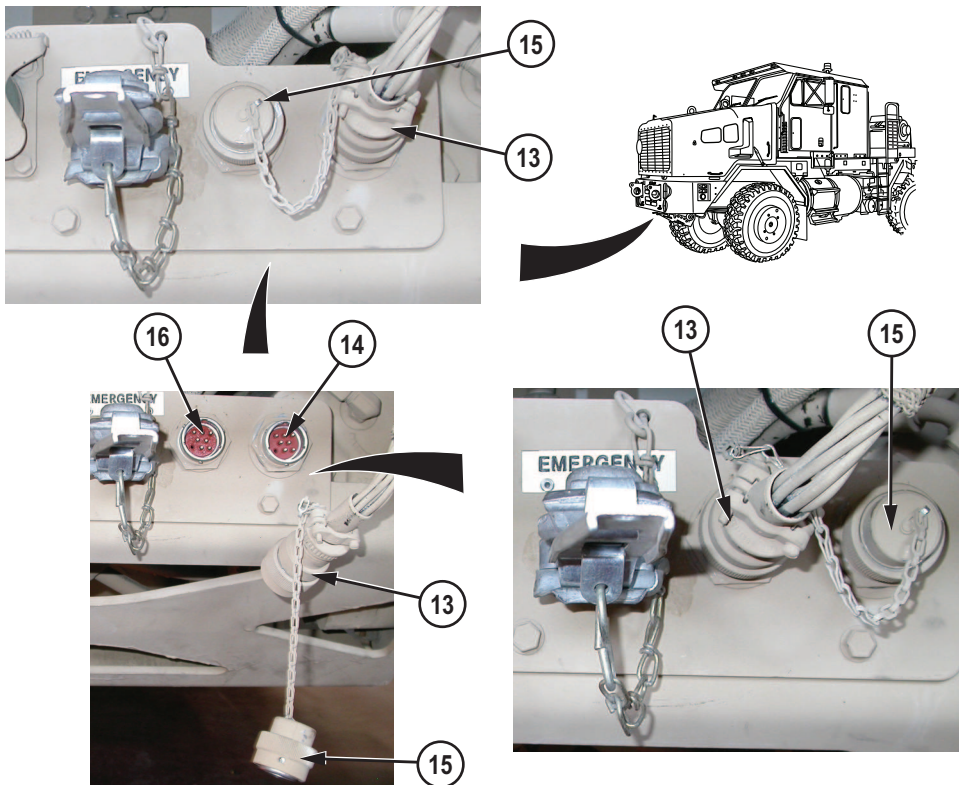
Ground guide and personnel lifting tow bar must be visible to operator at all times. Failure to comply may result in serious injury or death to personnel.

11. With the aid of ground guide, slowly back towing vehicle (1) while assistants lift tow bar (3) to level of pintle hook (9).
12. Continue to back towing vehicle (1) until tow bar lunette eye (10) engages pintle hook (9).
13. Pull pintle hook latch (12) and close top part of pintle hook (9).
14. Install cotter pin (11) in pintle hook (9).

**NOTE**

Wire harness connector MC112 must be moved to alternate receptacle MC112P before connecting intervehicular electrical cable. Failure to comply will result in disabled HET Tractor service lights not responding to towing vehicle inputs.

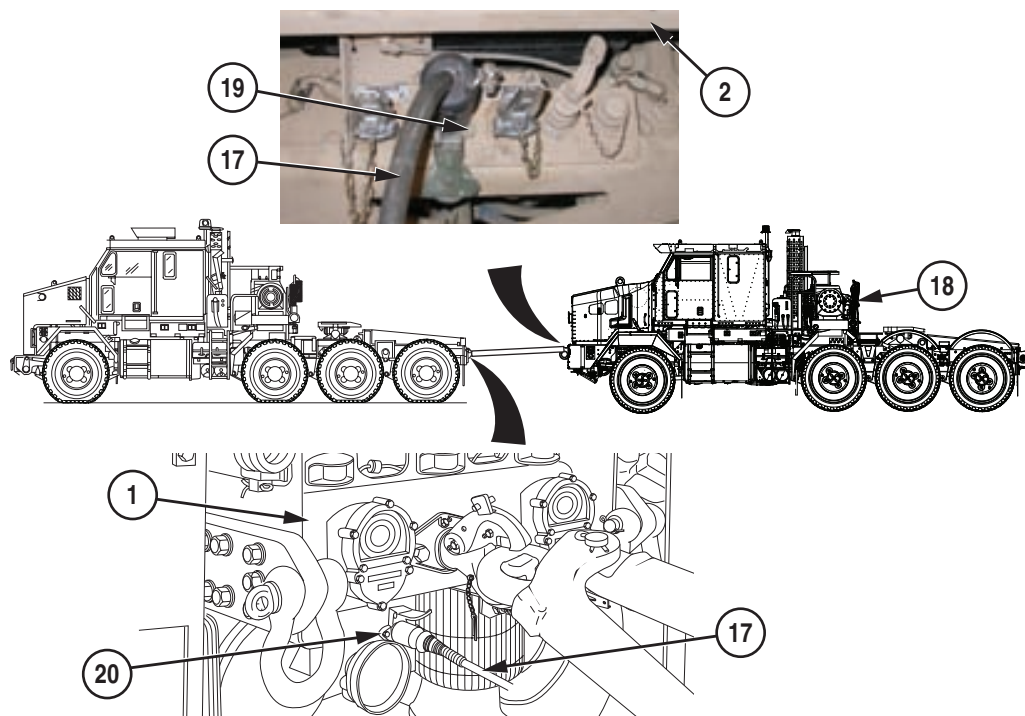
15. Disconnect connector MC112 (13) from connector MC112V (14) on disabled HET Tractor (2).

**TOW BAR CONNECTION - Continued**

*Figure 4. Tow Bar Connection.*

16. Remove cover (15) from connector MC112P (16).
17. Connect connector MC112 (13) to connector MC112P (16).
18. Install cover (15) on connector MC112V (14).
19. Remove intervehicular electrical cable (17) from pogo stick (18).

## TOW BAR CONNECTION - Continued



*Figure 5. Tow Bar Connection.*

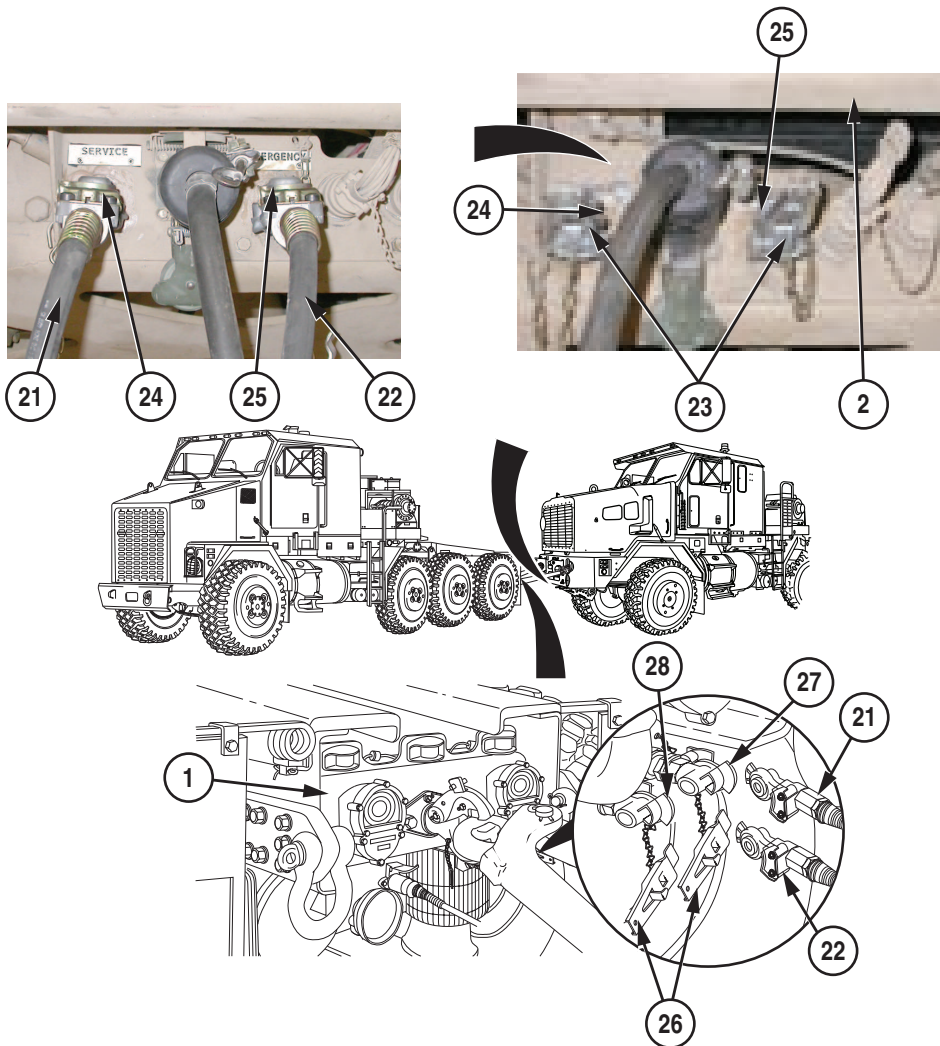
20. Connect intervehicular electrical cable (17) to connector MC113 (19) on disabled HET Tractor (2) and electrical receptacle (20) of towing vehicle (1).

### NOTE

- Go to Step (26) if disabled HET Tractor's air system is damaged.
- When towed, the M1070A1 HET Tractor's brakes can only be controlled when air is connected through the front gladhands.

21. Remove service (21) and emergency (22) intervehicular air hoses from stowage box.



**TOW BAR CONNECTION - Continued**

*Figure 6. Tow Bar Connection.*

22. Remove dummy couplings (23) from front SERVICE gladhand (24) and front EMERGENCY gladhand (25) of disabled HET Tractor (2).
23. Remove dummy couplings (26) from rear SERVICE gladhand (27) and rear EMERGENCY gladhand (28) of towing vehicle (1).
24. Connect service intervehicular air hose (21) to rear SERVICE gladhand (27) of towing vehicle (1) and front SERVICE gladhand (24) of disabled HET Tractor (2).

**TOW BAR CONNECTION - Continued**

25. Connect emergency intervehicular air hose (22) to rear EMERGENCY gladhand (28) of towing vehicle (1) and front EMERGENCY gladhand (25) of disabled HET Tractor (2).

**NOTE**

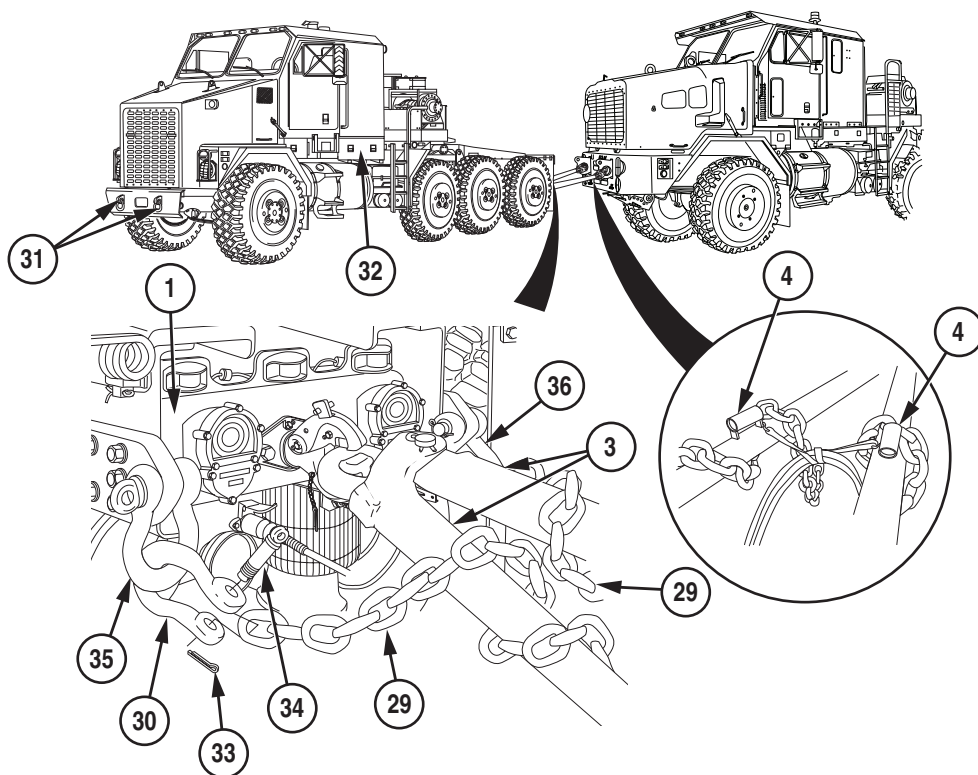
Go to Step (27) if intervehicular air hoses are installed.

26. Manually release spring brakes. (WP 0081)

**WARNING**

Utility chains are heavy and difficult to handle. Two personnel are required when handling utility chains. Failure to comply may result in serious injury or death to personnel.

27. With the aid of an assistant, retrieve one 14-foot utility chain (29) each from stowage on the disabled HET Tractor (2) and the towing vehicle (1).

**TOW BAR CONNECTION - Continued**

*Figure 7. Tow Bar Connection.*

**NOTE**

If M1070A1 HET Tractor is being used as towing vehicle, shackles are not available. Go to Step (34) to attach chains.

28. Retrieve two shackles (30) from front tow eyes (31) or stowage box (32) of towing vehicle (1).

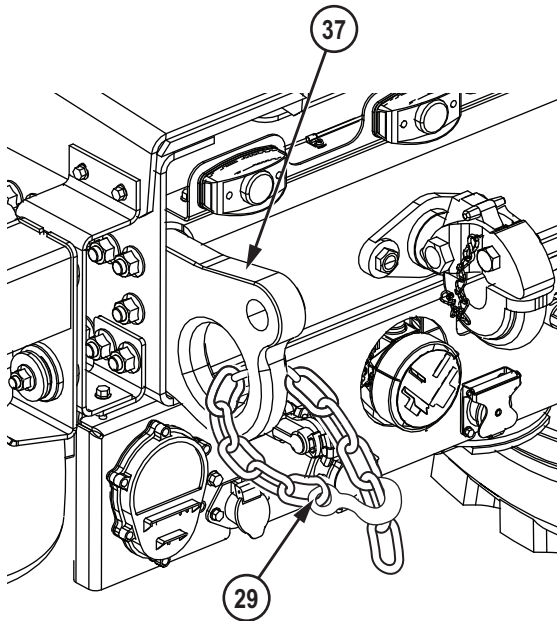
**NOTE**

Perform Steps (29) and (30) to remove shackles from front tow eyes or to disassemble shackles for use.

29. Remove two cotter pins (33) from pins (34) in shackles (30).
30. Remove two pins (34) from shackles (30).
31. Install two shackles (30) on rear tow eye shackles (35 and 36) of towing vehicle (1).

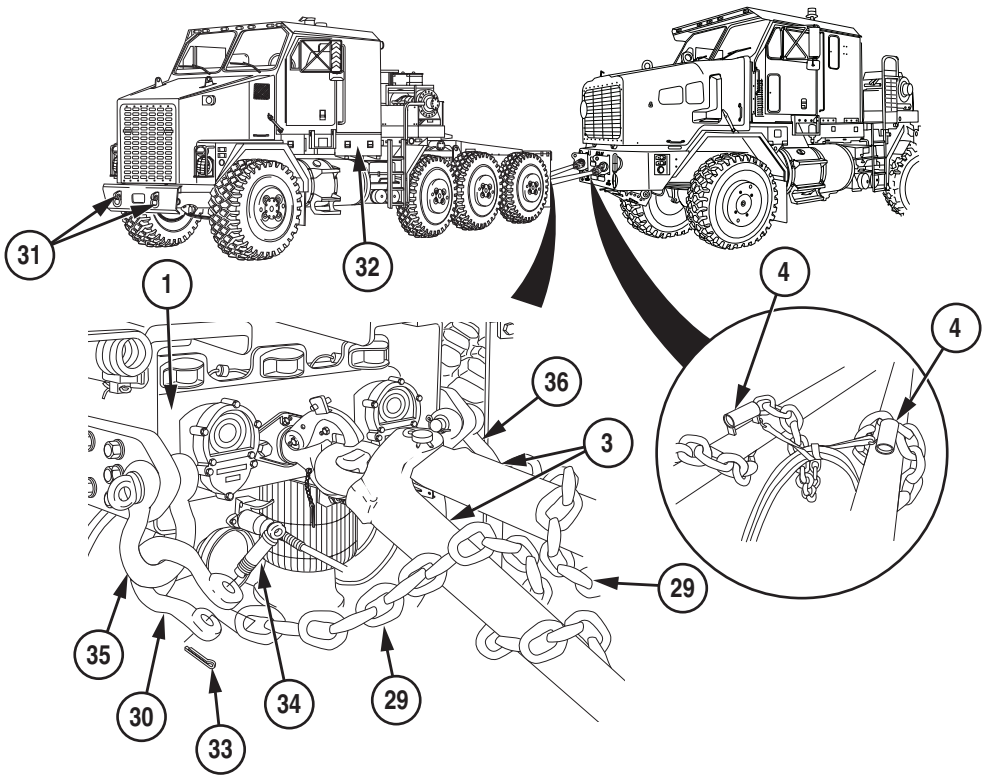
**TOW BAR CONNECTION - Continued**

32. Position 14-foot utility chains (29) in two shackles (30). Install two pins (34) through shackles (30) and 14-foot utility chains (29).
33. Install two cotter pins (33) in pins (34).
34. Pass hook of each 14-foot utility chain (29) through towing vehicle tow eye (37) on respective sides and connect hook to 14-foot utility chain (29).



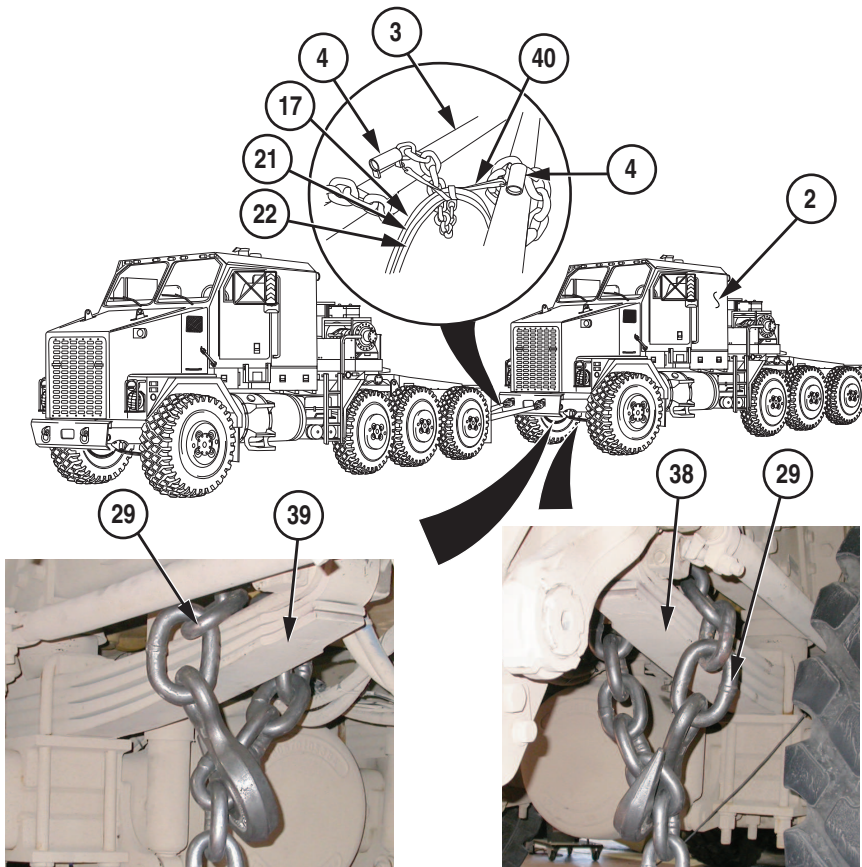
*Figure 8. Tow Bar Connection.*

35. With the aid of an assistant, install one 14-foot utility chain (29) around each leg of tow bar (3) with one wrap of chain in front of spare pin holders (4) and three wraps behind spare pin holders (4).

**TOW BAR CONNECTION - Continued**

*Figure 9. Tow Bar Connection.*

36. Attach one 14-foot utility chain (29) to front spring (38) on disabled HET Tractor (2).

**TOW BAR CONNECTION - Continued**

*Figure 10. Tow Bar Connection.*

37. Attach other 14-foot utility chain (29) to opposite side front spring (39) on disabled HET Tractor (2).
38. Remove rubber strap (40) from stowage box.

**CAUTION**

Slack in utility chains, air hoses, and electrical cable must be positioned evenly in front of and behind spare pin holder. Hoses and cable must not drag on ground. Failure to comply may result in damage to equipment.

39. Secure service (21) and emergency (22) intervehicular air hoses (if installed) and intervehicular electrical cable (17) to tow bar (3):
  - a. Attach rubber strap (40) to one spare pin holder (4).

**TOW BAR CONNECTION - Continued**

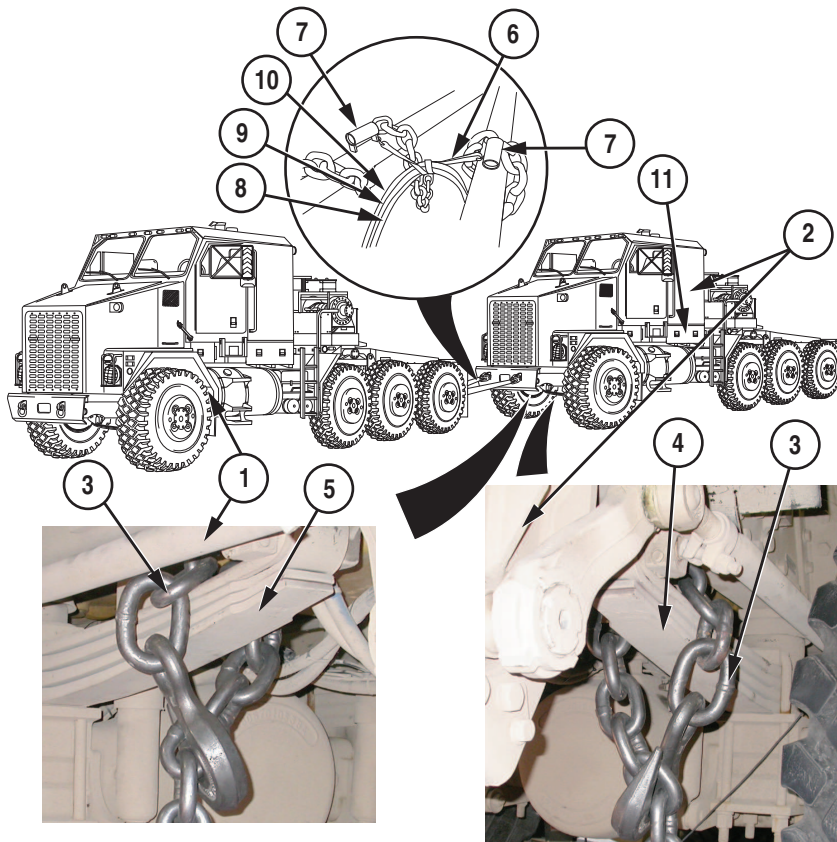
- b. Wrap rubber strap (40) twice around service (21) and emergency (22) intervehicular air hoses (if installed) and intervehicular electrical cable (17).
  - c. Attach rubber strap (40) to opposite spare pin holder (4).
40. Prepare disabled HET Tractor for towing.
41. Prepare towing vehicle for towing.

**TOW BAR DISCONNECTION**

1. Stop vehicles.
2. Apply parking brake on towing vehicle (1).
3. Turn off towing vehicle (1) beacon light (if equipped).
4. Turn off towing vehicle (1) emergency flashers.
5. Pull out TRAILER AIR SUPPLY control on towing vehicle (1).
6. Chock wheels (WP 0036) on disabled HET Tractor (2).

**NOTE**

- Perform Step (7) only if disabled HET Tractor air system is functional.
  - Perform Step (8) only if disabled HET Tractor air system is not functional.
7. Apply parking brake (WP 0049) on disabled HET Tractor (2).
  8. Manually apply spring (WP 0081) brakes on disabled HET Tractor (2).
  9. Place disabled HET Tractor (2) transfer case in engaged condition. (WP 0077)
  10. Disconnect utility chain (3) from front spring (4) on disabled HET Tractor (2).

**TOW BAR DISCONNECTION - Continued**

*Figure 11. Tow Bar Disconnection.*

11. Disconnect utility chain (3) from opposite side front spring (5) on disabled HET Tractor (2).
12. Remove rubber strap (6) from tow bar spare pin holders (7), service intervehicular air hose (8), emergency intervehicular air hose (9), and intervehicular electrical cable (10).
13. Stow rubber strap (6) in stowage box (11) of disabled HET Tractor (2).

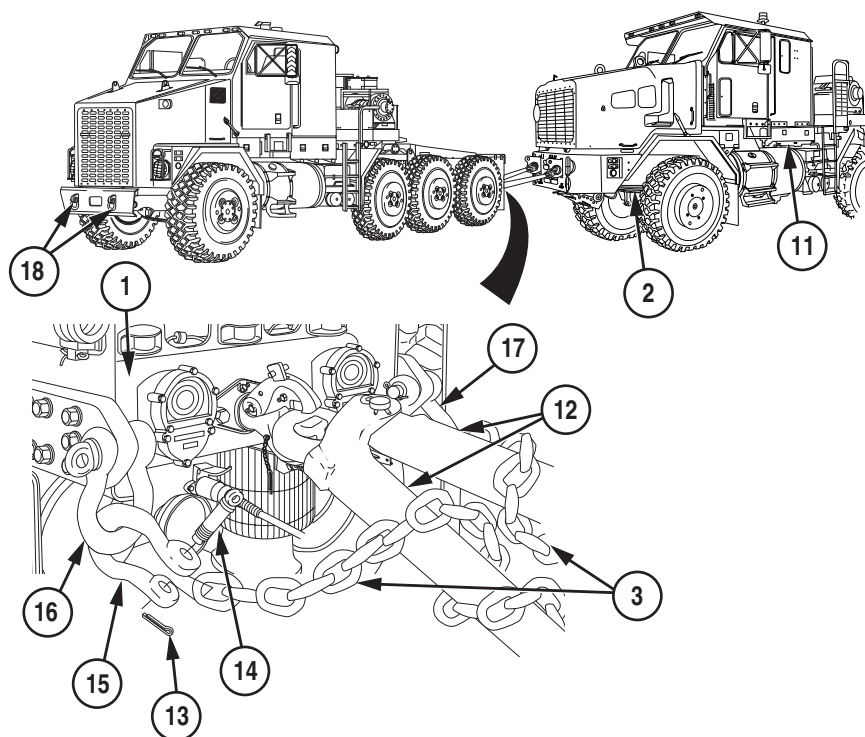
**NOTE**

- Perform Steps (14) through (18) if shackles were used to attach utility chains to towing vehicle.
- Go to Step (19) if towing vehicle is an M1070A1 HET Tractor and no shackles are used.



**TOW BAR DISCONNECTION - Continued**

14. With the aid of an assistant, unwrap utility chains (3) from legs of tow bar (12).



*Figure 12. Tow Bar Disconnection.*

15. Remove two cotter pins (13) from pins (14).
16. Remove two pins (14) from shackles (15) and utility chains (3).
17. Remove two shackles (15) from towing vehicle tow eye shackles (16 and 17).
18. Install two shackles (15) on front tow eyes (18) or return to stowage box of towing vehicle (1).
19. Disconnect utility chain hooks from utility chains (3), and pass hooks through tow eyes (19) to remove utility chains (3) from towing vehicle (1).

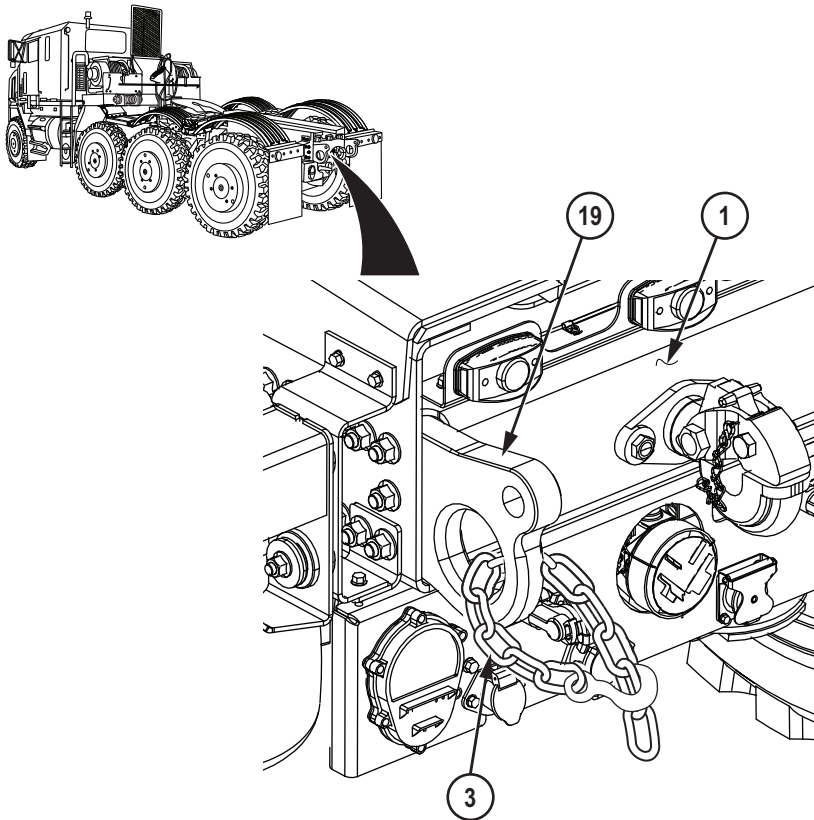
**TOW BAR DISCONNECTION - Continued**

Figure 13. Tow Bar Disconnection.

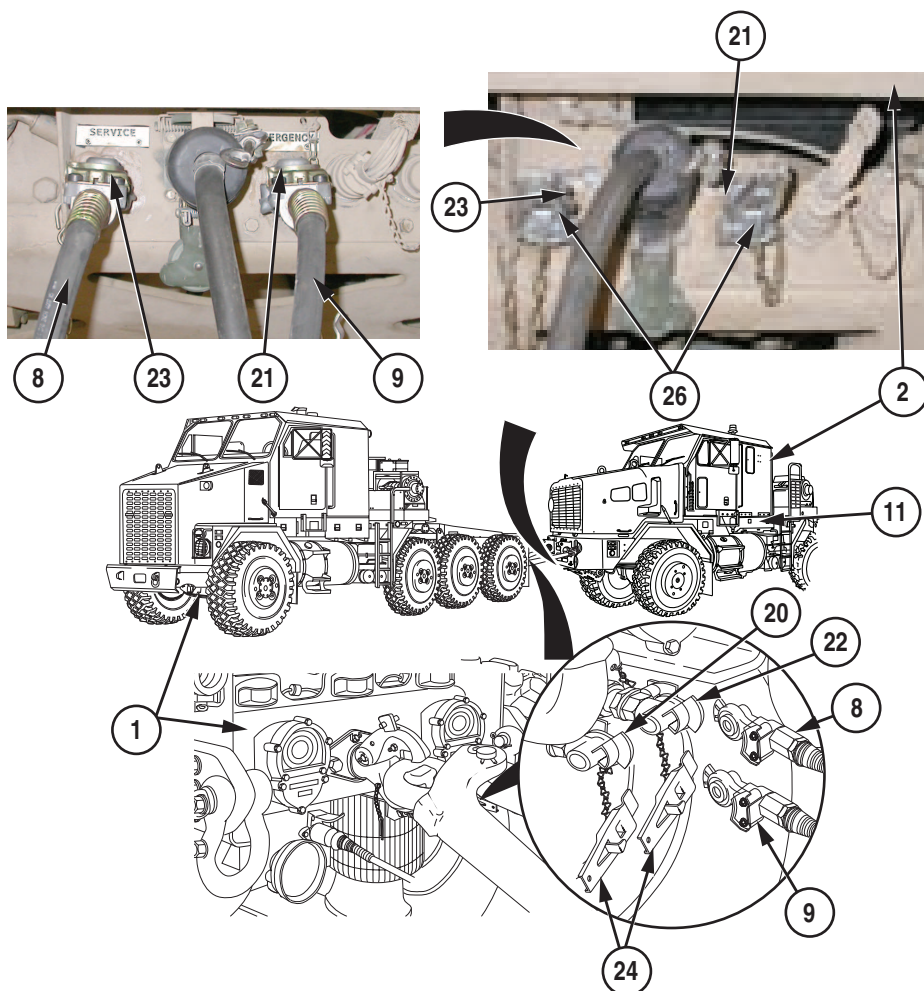
**WARNING**

Utility chains are heavy and difficult to handle. Two personnel are required when handling utility chains. Failure to comply may result in serious injury or death to personnel.

20. With the aid of an assistant, stow one utility chain (3) on towing vehicle (1) and one in disabled HET Tractor (2) stowage box (11).

**TOW BAR DISCONNECTION - Continued**

21. Disconnect emergency intervehicular air hose (9) from rear EMERGENCY gladhand (20) of towing vehicle (1) and front EMERGENCY gladhand (21) of disabled HET Tractor (2).

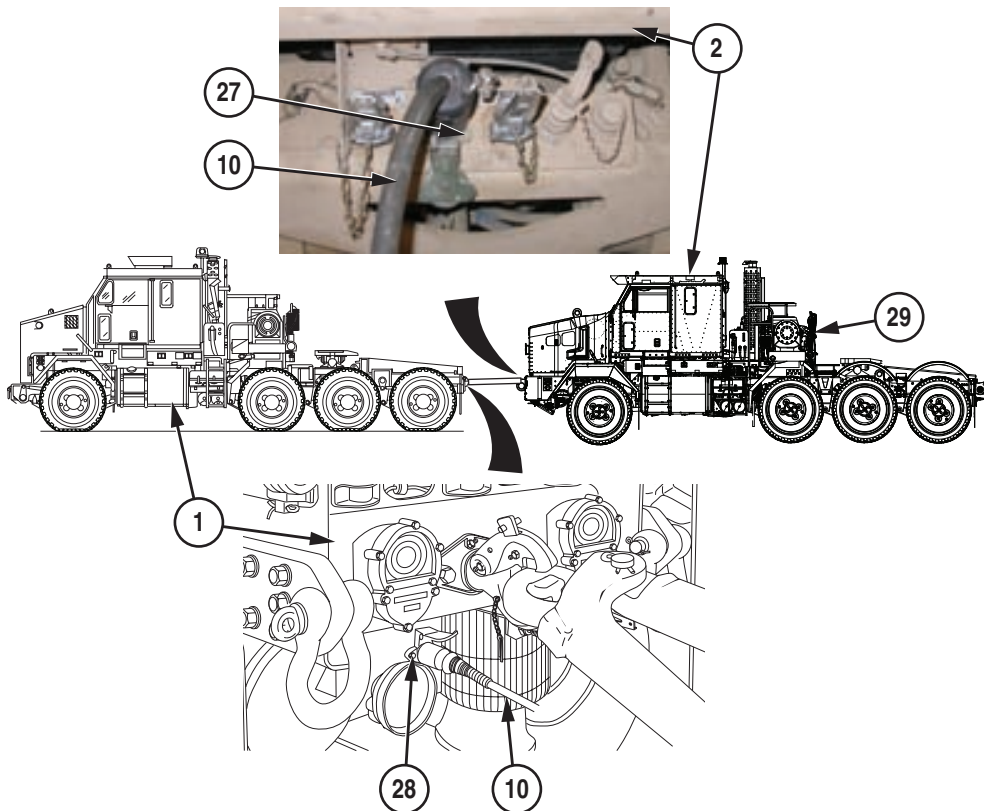


*Figure 14. Tow Bar Disconnection.*

22. Disconnect service intervehicular air hose (8) from rear SERVICE gladhand (22) of towing vehicle (1) and front SERVICE gladhand (23) of disabled HET Tractor (2).
23. Install dummy couplings (24) on rear SERVICE gladhand (22) and rear EMERGENCY gladhand (20) of towing vehicle (1).

**TOW BAR DISCONNECTION - Continued**

24. Install dummy couplings (26) on front SERVICE gladhand (23) and front EMERGENCY gladhand (21) of disabled HET Tractor (2).
25. Stow emergency intervehicular air hose (9) and service intervehicular air hose (8) in stowage box (11) on disabled HET Tractor (2).
26. Disconnect intervehicular electrical cable (10) from connector MC113 (27) on disabled HET Tractor (2) and electrical receptacle (28) of towing vehicle (1).



*Figure 15. Tow Bar Disconnection.*

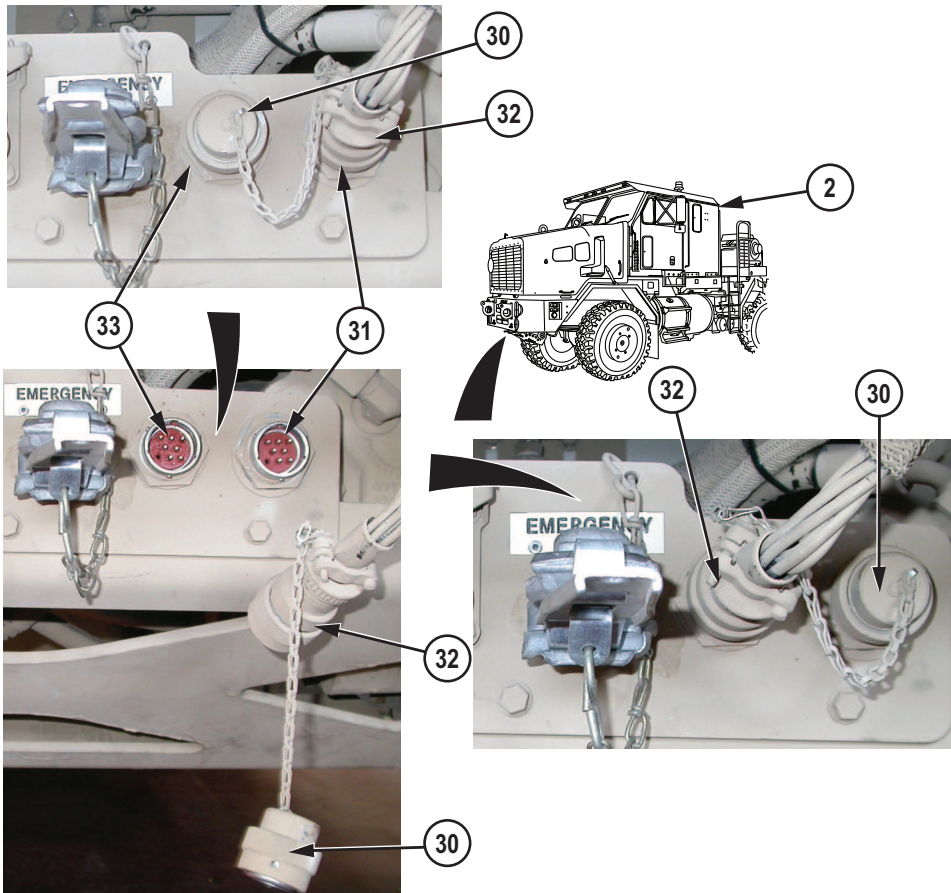
27. Stow intervehicular electrical cable (10) on pogo stick (29) of disabled HET Tractor.

**NOTE**

Wire harness connector MC112 must be moved back to receptacle MC112V after towing. If this is not done, service lights on disabled HET Tractor will not function after repairs are made.

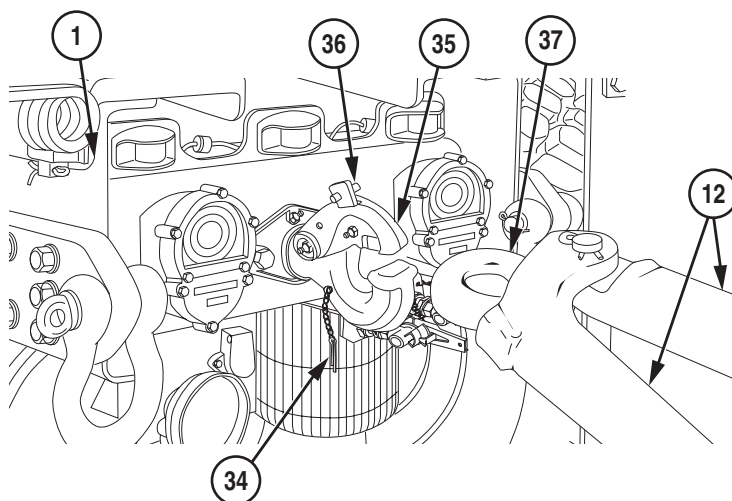
**TOW BAR DISCONNECTION - Continued**

28. Remove cover (30) from connector MC112V (31) on disabled HET Tractor (2).



*Figure 16.*

29. Remove connector MC112 (32) from connector MC112P (33).
30. Install connector MC112 (32) on connector MC112V (31).
31. Install cover (30) on connector MC112P (33).
32. Remove cotter pin (34) from pintle hook (35).

**TOW BAR DISCONNECTION - Continued**

*Figure 17. Tow Bar Disconnection.*

**WARNING**

Do not put hands near pintle hook while aligning lunette eye with pintle hook. Towing vehicle could move suddenly. Failure to comply may result in serious injury or death to personnel.

**WARNING**

Do not move towing vehicle without assistance of ground guide.

**WARNING**

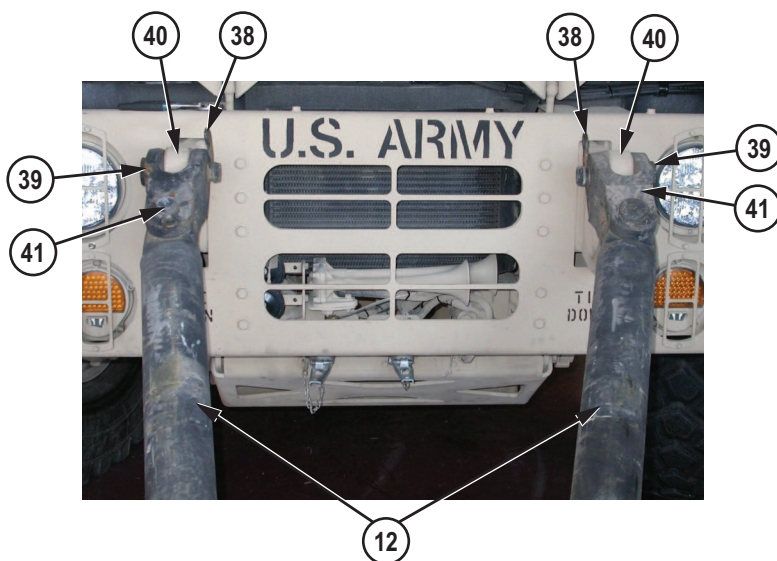
Ground guide and personnel lifting tow bar must be visible to operator at all times. Failure to comply may result in serious injury or death to personnel.

**NOTE**

To aid in tow bar removal, towing vehicle and disabled HET Tractor should be directly in line behind each other and pintle hook should be in vertical position.

**TOW BAR DISCONNECTION - Continued**

33. Pull latch (36) away from disabled HET Tractor and hold.
34. Lift top of pintle hook (35) and let go of latch (36) to lock pintle hook (35) open.
35. With the aid of two assistants, lift tow bar (12) until lunette eye (37) is above pintle hook (35).
36. With the aid of a ground guide, have an assistant drive towing vehicle (1) forward. When pintle hook (35) is clear of tow bar lunette eye (37), lower tow bar (12) to ground.
37. Pull latch (36) and close pintle hook (35).
38. Install cotter pin (34) in pintle hook (35).
39. While two assistants hold each leg of tow bar (12), remove two cotter pins (38) from pins (39).



*Figure 18. Tow Bar Disconnection.*

40. Remove two pins (39) from tow eyes (40) and tow bar shackles (41).

**TOW BAR DISCONNECTION - Continued****WARNING**

Tow bar is heavy and requires four people to carry. Do not drop tow bar. Failure to comply may result in serious injury or death to personnel.

41. Have assistants lower tow bar (12) to ground.
42. Install two pins (39) in tow bar shackles (41).
43. Install two cotter pins (38) in pins (39).
44. Return tow bar (12) to field level maintenance.

**END OF TASK****END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE PREPARE HEAVY EQUIPMENT TRANSPORTER (HET) FOR TOWING

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### INITIAL SETUP:

#### References

FM 4-30.31 (WP 0136)

TC 21-305-20 (WP 0136)

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### PREPARE HET TRACTOR FOR TOWING (FLAT TOW)

#### WARNING

Personnel must not occupy towed vehicle during towing operation. Vehicle may become disconnected while being towed. Failure to comply may result in serious injury or death to personnel.

#### CAUTION

Disabled vehicle GVWR must be 53,000 lb. (24 062 kg) or less. Failure to comply may result in damage to towing or disabled vehicle.

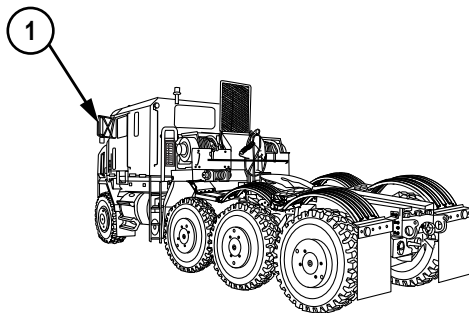
#### NOTE

Disabled vehicles must be prepared and moved in accordance with (WP 0136)

1. Connect tow bar between towing vehicle and disabled HET Tractor. (WP 0075)

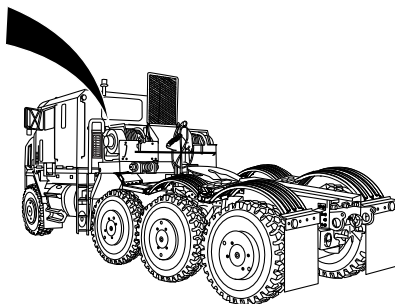
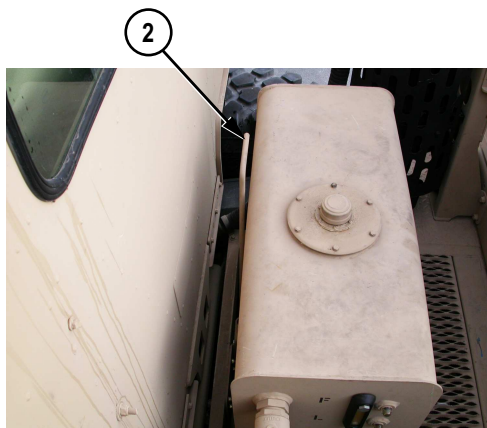
#### CAUTION

- Fold in outside rear view mirrors. Failure to comply may result in damage to equipment.
  - In the event of a hydraulic steering system failure, the transfer case to No. 2 axle propshaft and transfer case to No. 1 axle propshaft must be removed. Failure to comply may result in damage to transfer case and steering pump.
2. Fold in rear view mirrors (1) against doors of disabled HET Tractor.

**PREPARE HET TRACTOR FOR TOWING (FLAT TOW) - Continued**

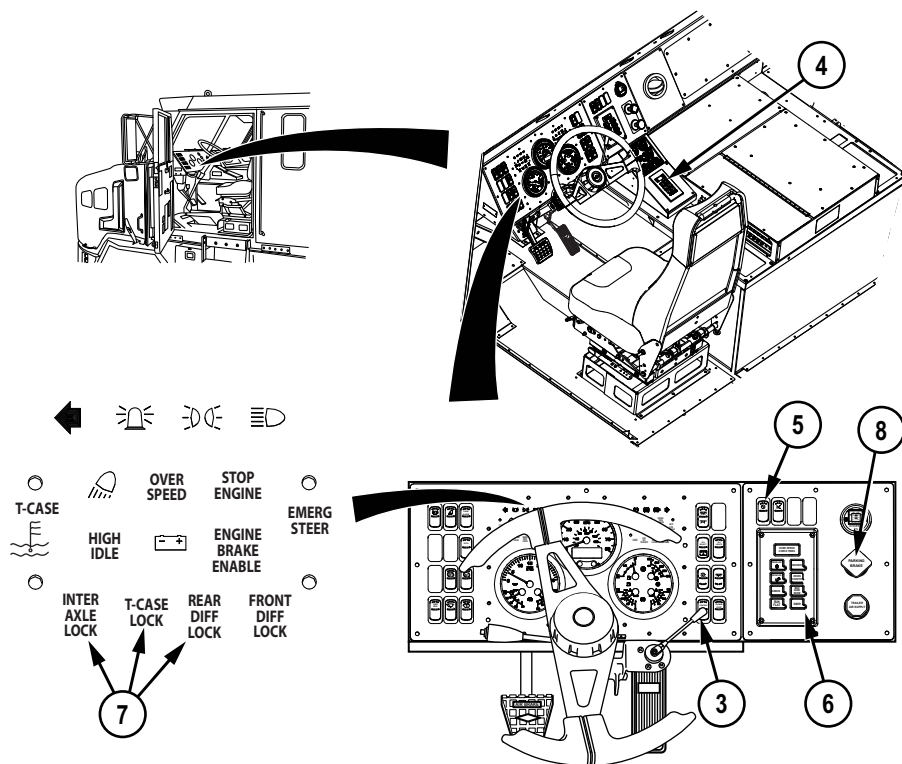
*Figure 1. Prepare HET Tractor for Towing (Flat Tow).*

3. Use transfer case shift lever (2) to engage transfer case neutral. (WP 0077)



*Figure 2. Prepare HET Tractor for Towing (Flat Tow).*

4. Push IGNITION/ENGINE STOP switch (3) up to IGNITION position.

**PREPARE HET TRACTOR FOR TOWING (FLAT TOW) - Continued**

*Figure 3. Prepare HET Tractor for Towing (Flat Tow).*

5. Set transmission range selector (4) to N (neutral). (WP 0064)
6. Verify that CTIS on/off switch (5) is set to down (on) position.
7. Set CTIS controller (6) to HIGHWAY terrain setting (WP 0052) and verify that no driveline lock indicator lights (7) are illuminated (green).
8. Push IGNITION/ENGINE STOP switch (3) down to ENGINE STOP position.
9. Remove and stow wheel chocks. (WP 0036)

**NOTE**

Perform Step (10) only if disabled HET Tractor air system is functional, intervehicular air lines are installed, and spring brakes were not released.

10. Release parking brakes (WP 0049) (8) on disabled HET Tractor.

**PREPARE TOWING VEHICLE (FLAT TOW)**

1. Start engine. (WP 0045)

**NOTE**

Perform Step (2) only if disabled HET Tractor air system is functional, intervehicular air lines are installed on front gladhands, and spring brakes were not released.

2. Push in TRAILER AIR SUPPLY control on towing vehicle.

**NOTE**

If brakes on disabled HET Tractor do not release when air is applied, manually release disabled HET Tractor brake chambers. (WP 0081)

3. Push in PARKING BRAKE control and verify that disabled HET Tractor brakes release.
4. Turn on towing vehicle beacon light (if equipped) and emergency flashers.
5. Release parking brakes on towing vehicle.

**WARNING**

- Normal paved road towing speed limit is 15 mph (24 km/h). If operator determines towed Heavy Equipment Transporter (HET) Tractor has braking capability and the terrain allows for safe operation, higher speeds may be used. Do not exceed 25 mph (40 km/h) under any conditions. Failure to comply may result in loss of control and serious injury or death to personnel.
- If towed HET Tractor does not have braking capability, or is being flat towed from the rear, stopping distances are greatly increased. When operating under these conditions, do not exceed 5 mph (8 km/h). Failure to comply may result in serious injury or death to personnel.
- Use extreme caution when towing HET Tractor off-road. Side slopes, poor traction, and steep grades can cause loss of control. When towing off-road, do not exceed 15 mph (24 km/h). Failure to comply may result in serious injury or death to personnel.

**CAUTION**

- Avoid turning tight corners while towing a disabled HET Tractor with a tow bar. Failure to comply may result in damage to towing vehicle or disabled HET Tractor.

**PREPARE TOWING VEHICLE (FLAT TOW) - Continued**

- When using a tow bar, a towed HET Tractor must be backed in a straight line. Never attempt to steer a towed HET Tractor into position. Failure to comply may result in damage to towing vehicle or disabled HET Tractor.

6. Transport disabled HET Tractor.

**PREPARE HET TRACTOR FOR TOWING USING M984 WRECKER (LIFT and TOW)****CAUTION**

- Appropriate transfer case to axle propeller shaft must be removed prior to performing lift and tow operation. Failure to comply may result in damage to transfer case.
- Use only Multi-Use Adapters (MUA), part numbers 3483699 and 3484856 and adapter holes No. 4 and No. 5 for rear lift and tow operations on the M1070 A1 HET Tractor. Use of other adapters for rear lift and tow operations may result in damage to equipment.

**NOTE**

- Perform Steps (1) through (4) if towing from the rear.
  - When towing the M1070 A1 HET Tractor from the rear, MUA part number 3483699 is installed on driver side rear tow eye and MUA part number 3484856 is installed on passenger side rear tow eye.
  - Install MUAs on rear tow eyes with hole No. 2 above towing assembly and holes No. 4, No. 5, and No. 6 toward disabled HET Tractor.
  - Perform Steps (5) and (6) if towing from the front.
1. Secure steering wheel in straight ahead position with steering wheel lock pin (1).

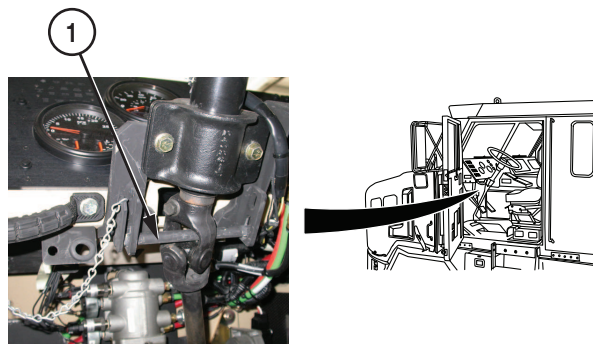
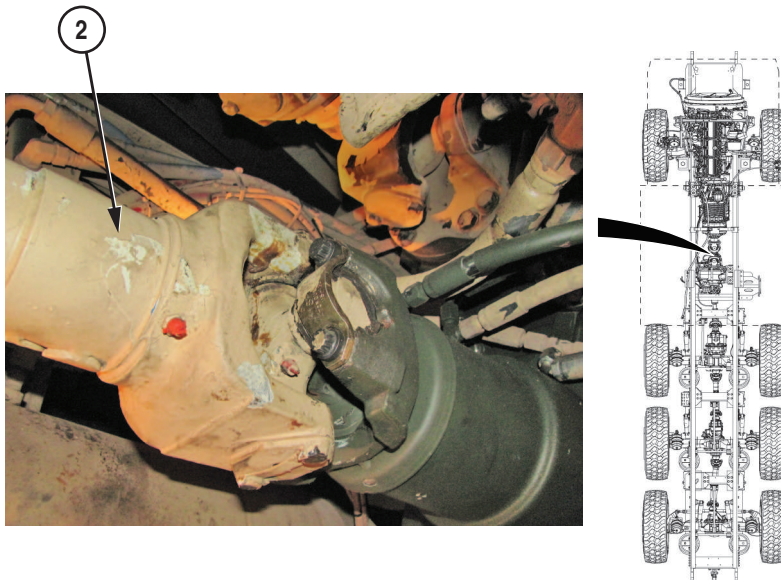


Figure 4. Prepare HET Tractor for Towing (Lift and Tow).

**PREPARE HET TRACTOR FOR TOWING USING M984 WRECKER (LIFT and TOW) - Continued**

2. Check for driveline windup by twisting transfer case to axle No. 1 propeller shaft (2) back and forth by hand to verify movement. If no movement is evident:



*Figure 5. Prepare HET Tractor for Towing (Lift and Tow).*

- a. Move clear of underside of HET Tractor.
- b. Use towing vehicle to move disabled HET Tractor forward 10 ft. (3 m), then backward 10 ft. (3 m).
- c. Check for driveline windup by twisting transfer case to axle No. 1 propeller shaft (2) back and forth by hand. If movement is evident, driveline windup has been relieved.
- d. If no movement is evident, repeat Steps (b) and (c) until windup is relieved.

**WARNING**

Relieve driveline windup before loosening any propeller shaft connections. Removing propeller shaft with driveline windup present can cause shaft to fly off when final connection is removed. Failure to comply may result in serious injury or death to personnel.

3. When driveline windup is relieved, remove transfer case to axle No. 1 propeller shaft (2).

**PREPARE HET TRACTOR FOR TOWING USING M984 WRECKER (LIFT and TOW) - Continued**

4. Ensure that HET Tractor is lifted high enough that axle No. 2 tires are not in contact with ground during transport.

**CAUTION**

Use only Multi-Use Adapters (MUA), part numbers 3483699 and 3484856 and adapter holes No. 4 for front lift and tow operations on the M1070 A1 HET Tractor. Use of other adapters for front lift and tow operations may result in damage to equipment.

**NOTE**

- Perform Steps (5) and (6) only if towing from the front.
  - When towing the M1070 A1 HET Tractor from the front, MUA part number 3483699 is installed on passenger side and MUA part number 3484856 is installed on driver side.
  - Install MUAs with hole No. 2 above towing assembly and holes No. 4, No. 5, and No. 6 toward disabled HET Tractor.
5. Check for driveline windup by twisting transfer case to axle No. 2 propeller shaft (3) back and forth by hand to verify movement. If no movement is evident:

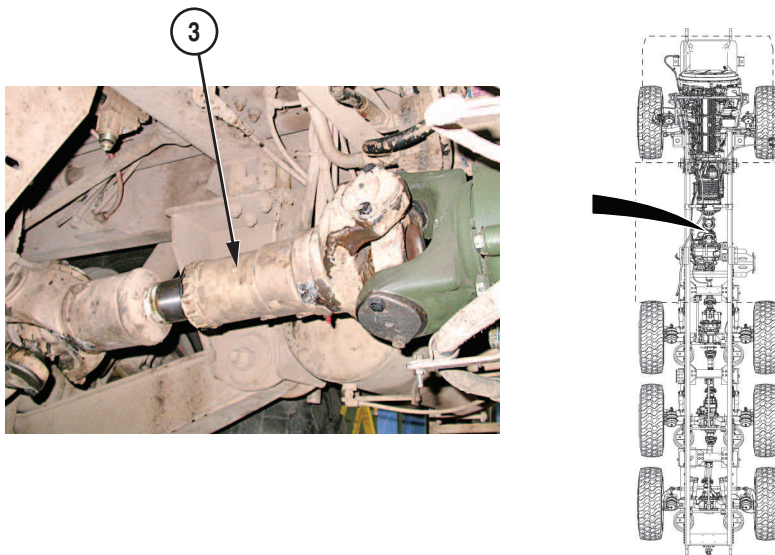


Figure 6. Prepare HET Tractor for Towing (Lift and Tow).

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**PREPARE HET TRACTOR FOR TOWING USING M984 WRECKER (LIFT and TOW) - Continued**

- a. Move clear of underside of HET Tractor.
  - b. Use towing vehicle to move disabled HET Tractor forward 10 ft. (3 m), then backward 10 ft. (3 m).
  - c. Check for driveline windup by twisting transfer case to axle No. 2 propeller shaft (3) back and forth by hand. If movement is evident, driveline windup has been relieved.
  - d. If no movement is evident, repeat Steps (b) and (c) until windup is relieved.
6. When driveline windup is relieved, remove transfer case to axle No. 2 propeller shaft (3).
  7. Fold in rear view mirrors (4) against doors of disabled HET Tractor.

**NOTE**

Whether towing disabled HET Tractor from the front or rear, wire harness connector MC112 must be moved to alternate receptacle MC112P before connecting intervehicular electrical cable. If this is not done, service lights on disabled HET Tractor will not respond to inputs from the towing vehicle.

8. Remove connector MC112 (5) from connector MC112P (6) on disabled HET Tractor.



## PREPARE HET TRACTOR FOR TOWING USING M984 WRECKER (LIFT and TOW) - Continued

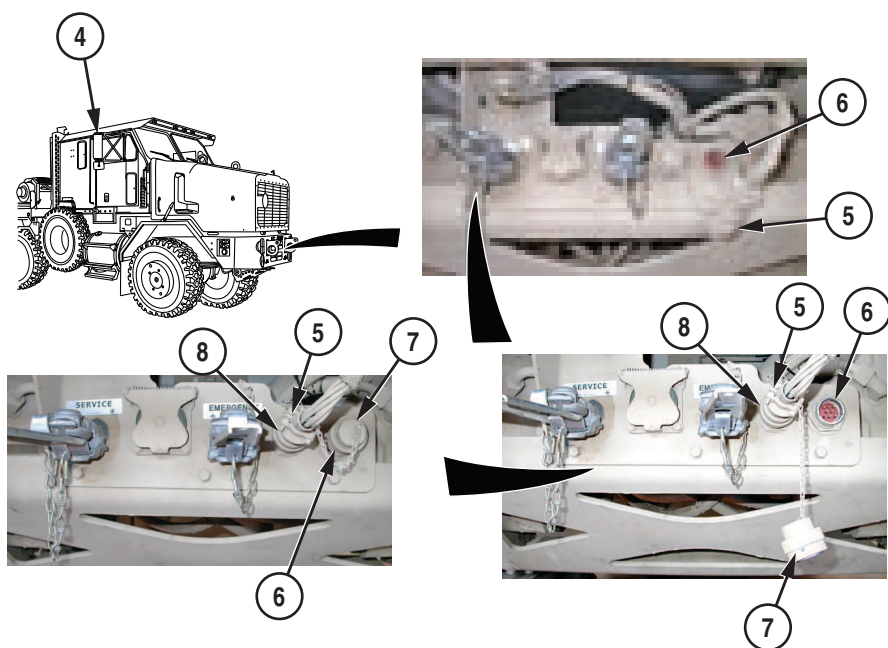


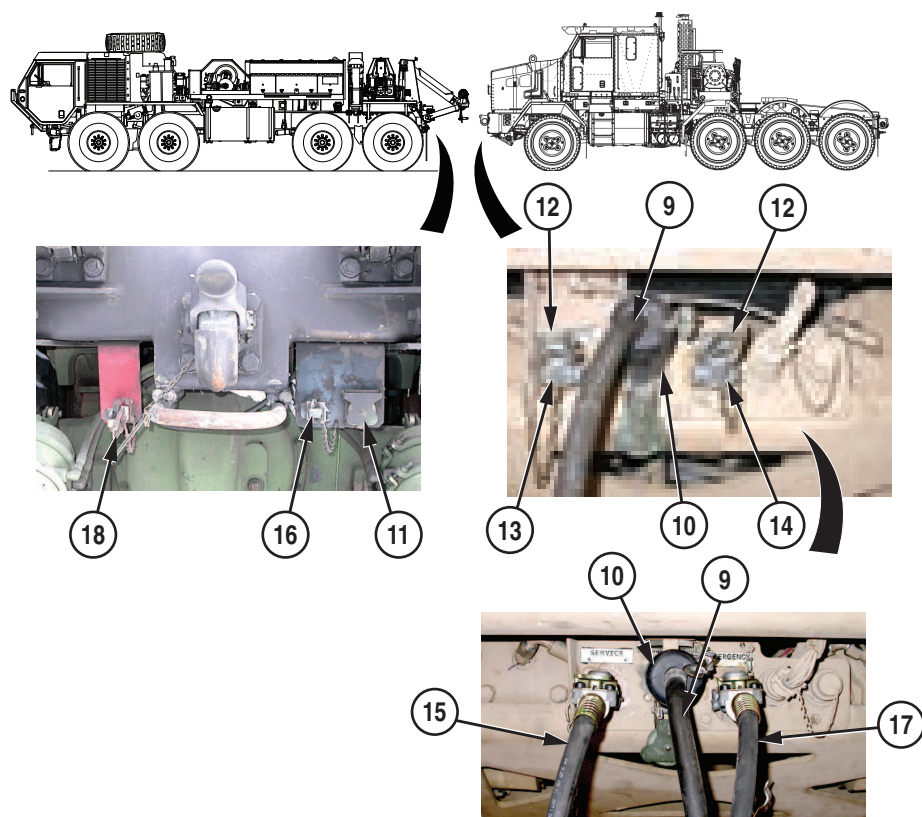
Figure 7. Prepare HET Tractor for Towing (Lift and Tow).

9. Remove cover (7) from connector MC112P (8).
10. Install connector MC112 (5) on connector MC112P (8).
11. Install cover (7) on connector MC112V (6).

### NOTE

- Air and electrical connections for towing HET Tractor from front or rear are similar, front connections shown.
  - Position towing vehicle close enough to disabled HET Tractor to make connections without stress on hoses or cable.
12. Connect intervehicular electrical cable (9) to connector MC113 (10) on disabled HET Tractor and electrical receptacle (11) of towing vehicle.

# **PREPARE HET TRACTOR FOR TOWING USING M984 WRECKER (LIFT and TOW) - Continued**

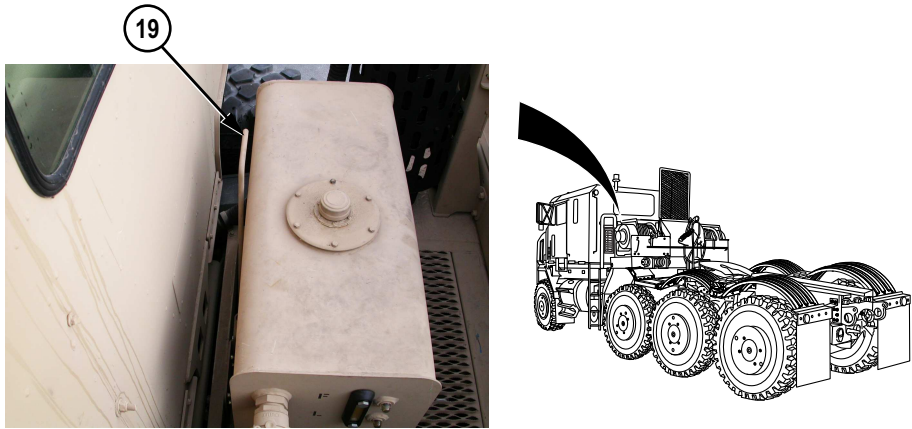


*Figure 8. Prepare HET Tractor for Towing (Lift and Tow).*

## **NOTE**

Go to Step (17) if disabled HET Tractor's air system is damaged.

13. Remove dummy couplings (12) from gladhands (13 and 14) of disabled HET Tractor.
14. Connect service intervehicular air hose (15) to service gladhand (16) of towing vehicle and service gladhand (13) of disabled HET Tractor.
15. Connect emergency intervehicular air hose (17) to emergency gladhand (18) of towing vehicle and emergency gladhand (14) of disabled HET Tractor.
16. Use transfer case shift lever (19) on disabled HET Tractor to engage transfer case neutral. (WP 0077)

**PREPARE HET TRACTOR FOR TOWING USING M984 WRECKER (LIFT and TOW) - Continued**

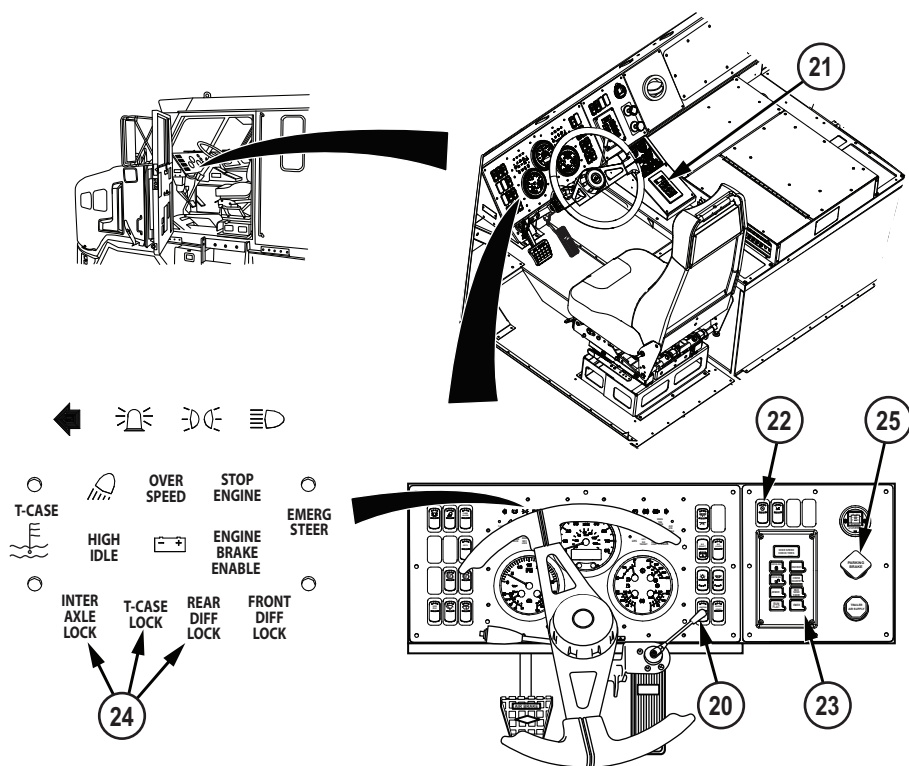
*Figure 9. Prepare HET Tractor for Towing (Lift and Tow).*

**NOTE**

Perform Steps (17) through (22) in cab of disabled HET Tractor.

17. Push IGNITION/ENGINE STOP switch (20) up to IGNITION position.

# **PREPARE HET TRACTOR FOR TOWING USING M984 WRECKER (LIFT and TOW) - Continued**



*Figure 10. Prepare HET Tractor for Towing (Lift and Tow).*

18. Set transmission range selector (21) to N (neutral). (WP 0064)
19. Verify that CTIS on/off switch (22) is set to down (on) position.
20. Set CTIS controller (23) to HIGHWAY terrain setting (WP 0052) and verify that no driveline lock indicator lights (24) are illuminated (green).
21. Push IGNITION/ENGINE STOP switch (20) down to ENGINE STOP position.

## **NOTE**

If Steps (13) through (15) were not performed due to air system damage on disabled HET Tractor, manually release spring brakes, (WP 0081) and skip Step (22).

22. Push PARKING BRAKE control (WP 0049) (25) in and verify brakes release.

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**PREPARE HET TRACTOR FOR TOWING USING M984 WRECKER (LIFT and TOW) - Continued****WARNING**

- Normal paved road towing speed limit is 15 mph (24 km/h). If operator determines towed Heavy Equipment Transporter (HET) Tractor has braking capability and the terrain allows for safe operation, higher speeds may be used. Do not exceed 25 mph (40 km/h) under any conditions. Failure to comply may result in loss of control and serious injury or death to personnel.
- If towed HET Tractor does not have braking capability, or is being flat towed from the rear, stopping distances are greatly increased. When operating under these conditions, do not exceed 5 mph (8 km/h). Failure to comply may result in serious injury or death to personnel.
- Use extreme caution when towing HET Tractor off-road. Side slopes, poor traction, and steep grades can cause loss of control. When towing off-road, do not exceed 15 mph (24 km/h). Failure to comply may result in serious injury or death to personnel.

23. Transport disabled HET Tractor in accordance with M984 operating procedures.

**END OF TASK**

**END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE ENGAGE/DISENGAGE TRANSFER CASE NEUTRAL ENGAGE LEVER

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### INITIAL SETUP:

#### Equipment Condition

Transmission in neutral. (WP 0064)

#### Equipment Condition (cont.)

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

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### ENGAGE TRANSFER CASE NEUTRAL ENGAGE LEVER

#### WARNING

Heavy Equipment Transporter (HET) Tractor can roll when transfer case is in neutral condition. Parking brake and/or wheel chocks must be used to prevent HET Tractor from rolling. Failure to comply may result in injury or death to personnel.

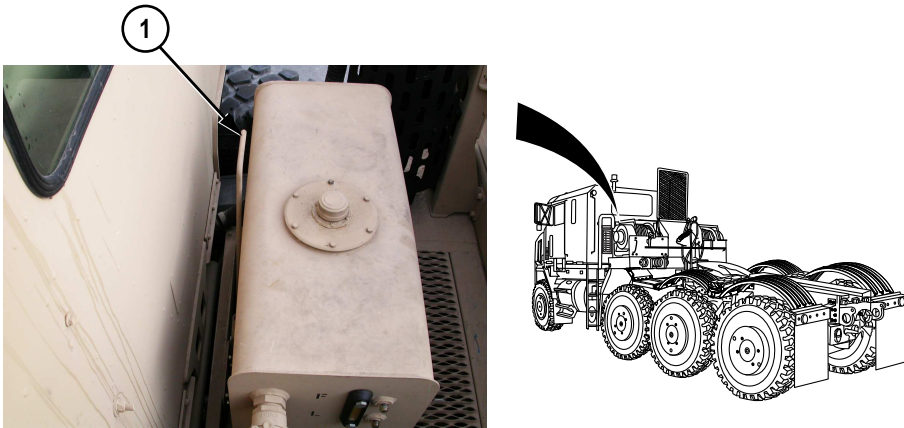
#### CAUTION

- Do not force transfer case neutral engage lever. Lever may work hard if there is driveline windup. Using excessive force on transfer case neutral engage lever may cause damage to transfer case shift linkage.
- Do not move transfer case neutral engage lever when HET Tractor is moving, or when transmission is in gear. Severe damage to drive line may result.

#### NOTE

- To help relieve driveline windup: with engine running, set transmission range selector to D (drive), then back to N (neutral). Pull up on transfer case neutral engage lever as the transmission transfers into N (neutral).
- Place transfer case in neutral position when flat towing of HET Tractor is required. For all other towing operations, disconnect transfer case output propeller shafts.

Pull up on transfer case neutral engage lever (1) to engage transfer case neutral condition. Transfer case neutral engage lever (1) should lock securely in the up position when neutral is engaged.

**ENGAGE TRANSFER CASE NEUTRAL ENGAGE LEVER - Continued**

*Figure 1. Engage Transfer Case Neutral Engage Lever.*

**END OF TASK****DISENGAGE TRANSFER CASE NEUTRAL ENGAGE LEVER****WARNING**

Heavy Equipment Transporter (HET) Tractor can roll when transfer case is in neutral condition. Parking brake and/or wheel chocks must be used to prevent HET Tractor from rolling. Failure to comply may result in injury or death to personnel.

**CAUTION**

- Do not force transfer case neutral engage lever. Lever may work hard if there is driveline windup. Using excessive force on transfer case neutral engage lever may cause damage to transfer case shift linkage.
- Do not move transfer case neutral engage lever when Het Tractor is moving, or when transmission is in gear. Severe damage to drive line may result.

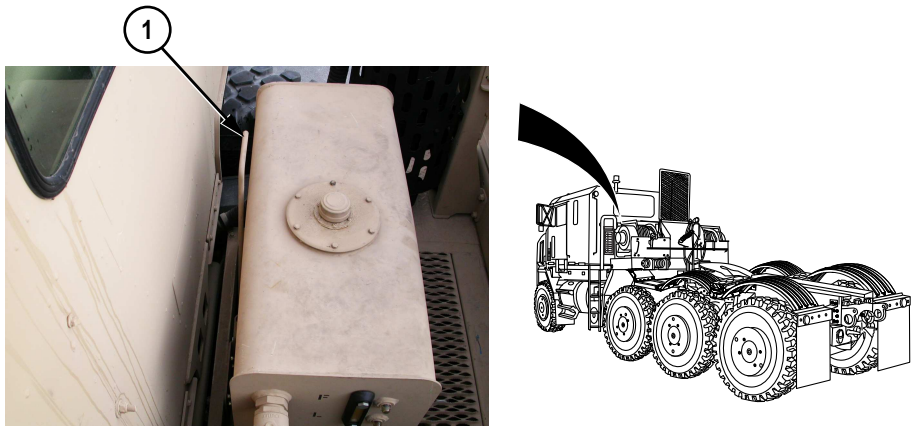
**NOTE**

To help relieve driveline windup: with engine running, set transmission range selector to D (drive), then back to N (neutral).



**DISENGAGE TRANSFER CASE NEUTRAL ENGAGE LEVER - Continued**

Push down on transfer case neutral engage lever (1) to disengage transfer case neutral condition. Transfer case neutral engage lever (1) should lock securely in the down position when neutral is disengaged.



*Figure 2. Disengage Transfer Case Neutral Engage Lever.*

**END OF TASK**

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
SET UP/SECURE HIGHWAY EMERGENCY MARKER KIT**

---

**INITIAL SETUP:**

Not Applicable

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**PREPARE VEHICLE/SET UP MARKERS FOR USE**

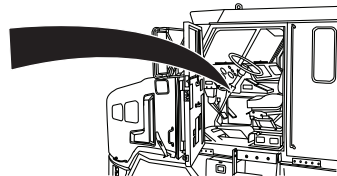
**WARNING**

Be aware of traffic when exiting Heavy Equipment Transporter (HET) Tractor. Failure to comply may result in serious injury or death to personnel.

**NOTE**

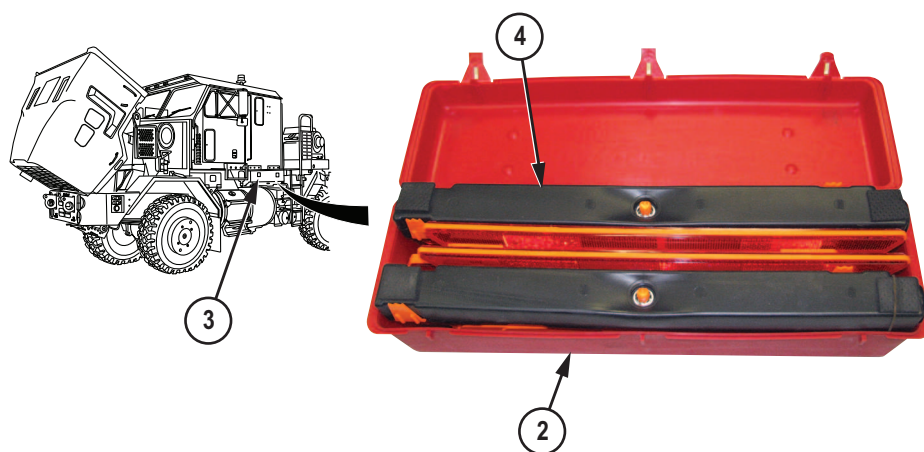
Highway emergency marking kit is used to mark location of stopped/disabled Heavy Equipment Transporter (HET) Tractor and to caution oncoming traffic.

1. Push in emergency flasher control (WP 0040) (1).



*Figure 1. Prepare Vehicle.*

2. Prepare three markers for use:
  - a. Remove emergency marking kit case (2) from stowage box (3).

**PREPARE VEHICLE/SET UP MARKERS FOR USE - Continued**

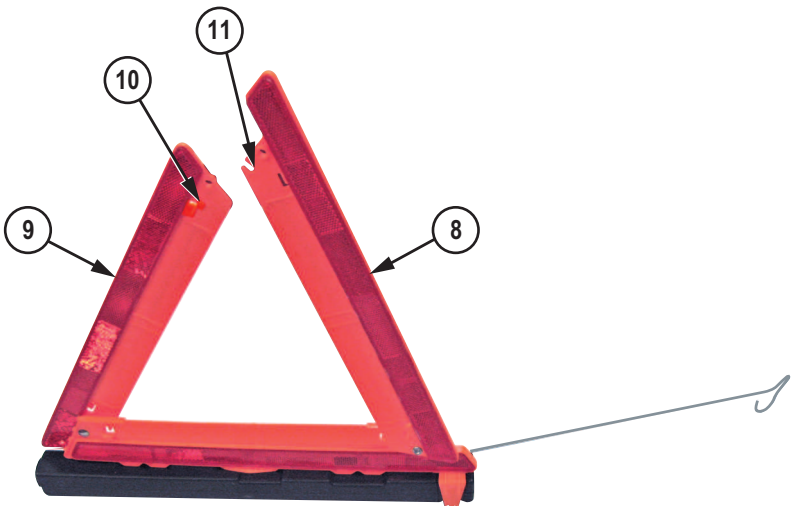
*Figure 2. Set Up Markers For Use.*

- b. Remove marker (4) from emergency marking kit case (2).
- c. Release pin (5) from tab (6) and swivel pin (6) to rear of marker base (7).



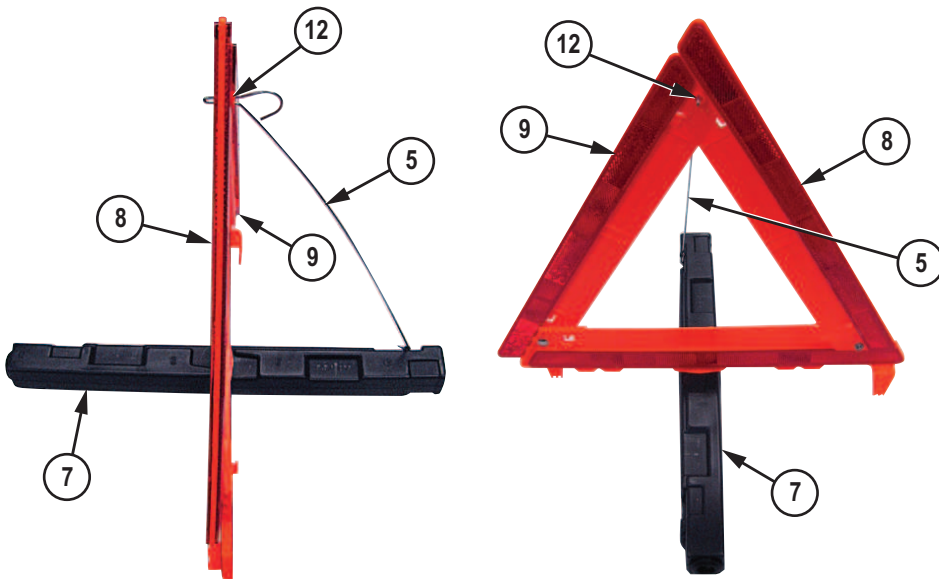
*Figure 3. Set Up Markers For Use.*

- d. Raise marker arm (8) and marker arm (9).

**PREPARE VEHICLE/SET UP MARKERS FOR USE - Continued**

*Figure 4. Set Up Markers For Use.*

- e. Overlap ends of marker arms (8 and 9) and snap pin (10) of marker arm (9) into slot (11) or marker arm (8).
- f. Rotate marker arms (8 and 9) about 1/4 turn on marker base (7) until marker arms (8 and 9) stop.

**PREPARE VEHICLE/SET UP MARKERS FOR USE - Continued**

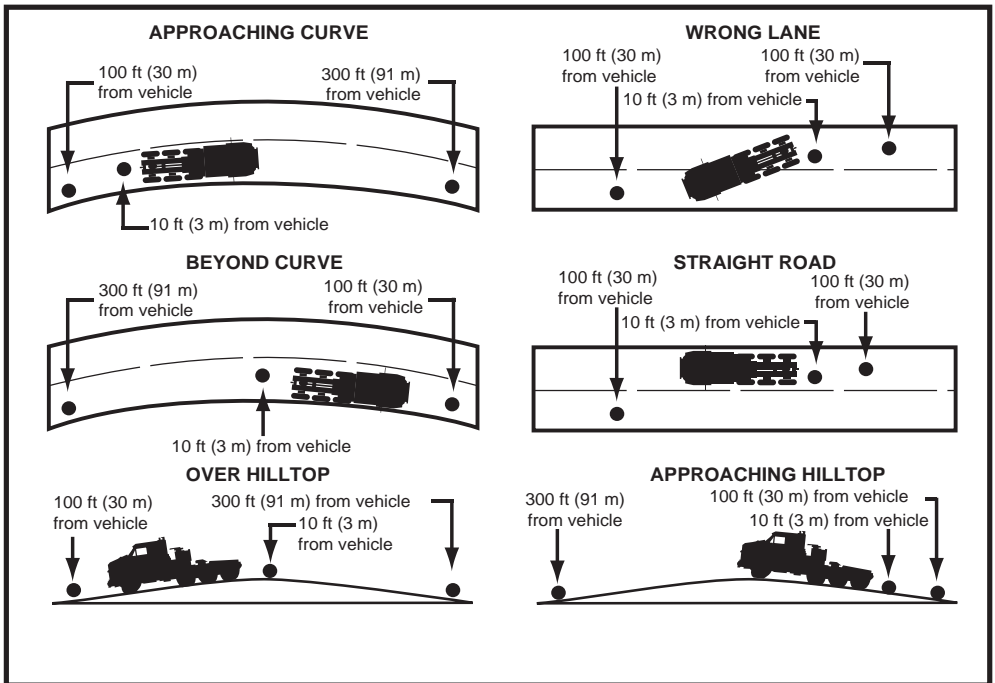
*Figure 5. Set Up Markers For Use.*

- g. Rotate pin (5) up and insert through hole (12) in marker arms (8 and 9).
- h. Repeat Steps (b) through (g) for remaining marker(s).

**NOTE**

- Before making any attempt to repair HET Tractor, place reflector(s) in obstructed lane or on shoulder of road (if HET Tractor is on or over shoulder) positioned between HET Tractor and approaching traffic using that lane.
- Refer to Figure 4 (below) for emergency marker placement in various situations.

- 3. To place markers (4) on highway at night (sunset to sunrise):

**PREPARE VEHICLE/SET UP MARKERS FOR USE - Continued**

*Figure 6. Set Up Markers For Use.*

- a. If HET Tractor is disabled on an undivided highway:
  - (1) Place first marker (4) in center of lane occupied by HET Tractor. Marker (4) should be placed about 120 paces or approximately 300 ft. (91 m) in front of HET Tractor, so marker faces traffic approaching from front. If HET Tractor is on or over shoulder and does not occupy a traffic lane, place warning device at same distance on edge of roadway to avoid obstructing traffic lane.
  - (2) Place second marker (4) four paces or approximately 10 ft. (3 m) behind HET Tractor, so marker faces traffic approaching from rear.
  - (3) Place third marker (4) about 40 paces or approximately 100 ft. (30 m) behind HET Tractor, so marker faces traffic approaching from rear.
- b. If HET Tractor is disabled in or near the driving lane of a divided highway:
  - (1) Place first marker (4) in the lane occupied by HET Tractor. Marker (4) should be placed four paces or approximately 10 ft. (3 m) behind HET Tractor, so marker faces traffic approaching from rear. If HET Tractor is on or over shoulder and does not occupy a traffic lane, place warning

**PREPARE VEHICLE/SET UP MARKERS FOR USE - Continued**

device at same distance on edge of roadway to avoid obstructing traffic lane.

- (2) Place second marker (4) about 40 paces or approximately 100 ft. (30 m) behind HET Tractor, so marker (4) faces traffic approaching from rear.
- (3) Place third marker (4) about 80 paces or approximately 200 ft. (61 m) behind second marker so marker faces traffic approaching from rear.

**NOTE**

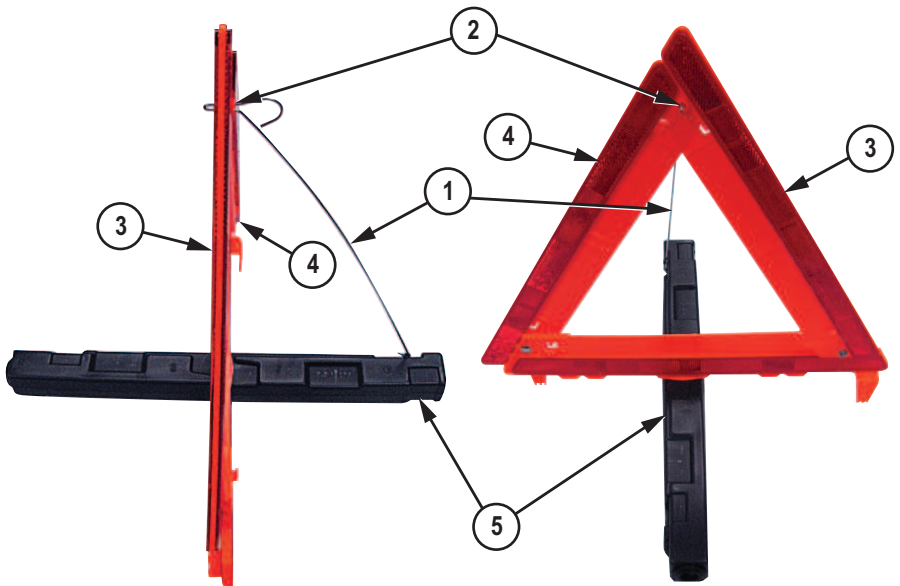
Refer to Figure 4 (above) for emergency marker placement in various situations.

4. To place markers (4) on highway during daylight hours (sunrise to sunset), position red flags or reflectors with flags mounted on them as prescribed for night.
  - a. Most warning kits contain only two flags.
  - b. Reflector placed closest to HET Tractor will have no flag mounted on it.

**SECURE/STOW HIGHWAY EMERGENCY MARKER KIT**

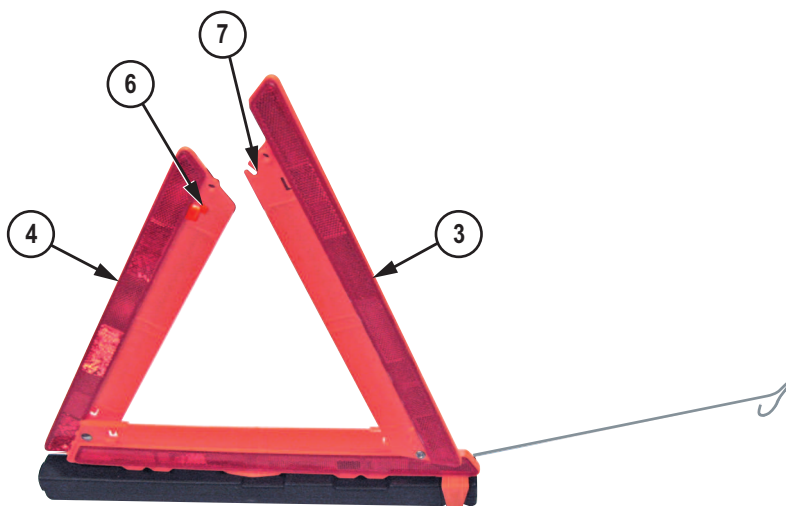
1. Stow three markers:
  - a. Remove pin (1) from hole (2) in marker arms (3 and 4) and rotate pin (1) to rear of marker base (5).



**SECURE/STOW HIGHWAY EMERGENCY MARKER KIT - Continued**

*Figure 7. Secure/Stow Highway Emergency Marker Kit.*

- b. Rotate marker arms (3 and 4) about 1/4 turn on marker base (5) until marker arms (3 and 4) stop parallel to marker base (5).
- c. Separate ends of marker arms (3 and 4) by removing snap pin (6) of marker arm (4) from slot (7) or marker arm (3).

**SECURE/STOW HIGHWAY EMERGENCY MARKER KIT - Continued**

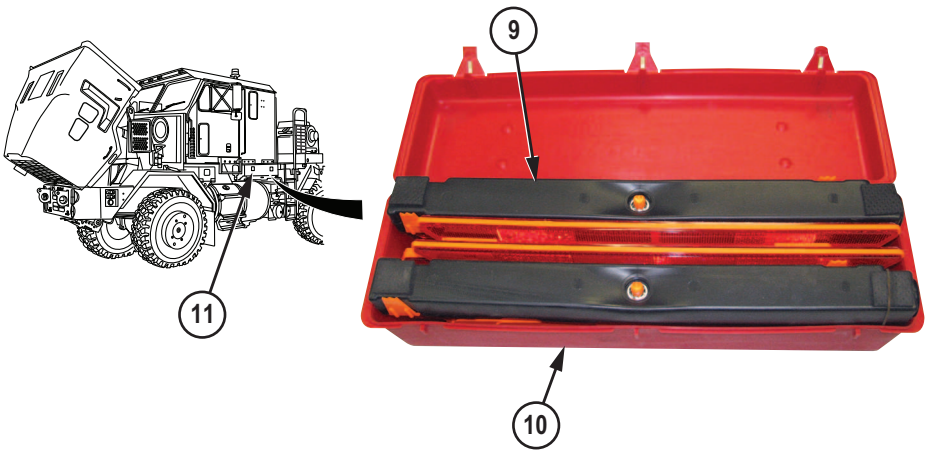
*Figure 8. Secure/Stow Highway Emergency Marker Kit.*

- d. Fold marker arm (4) and marker arm (3) down.
- e. Swivel pin (1) forward until it is parallel to marker base (5) and secure pin (1) between marker base and tab (8).



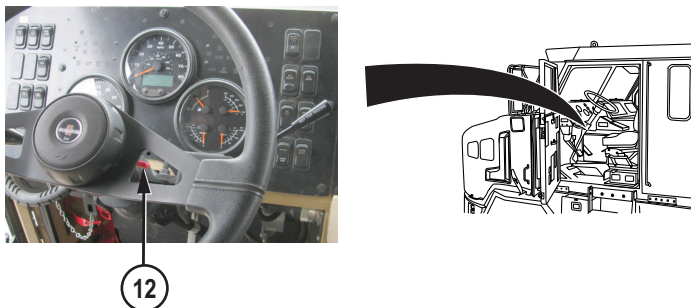
*Figure 9. Secure/Stow Highway Emergency Marker Kit.*

- f. Return marker (9) from emergency marking kit case (10).

**SECURE/STOW HIGHWAY EMERGENCY MARKER KIT - Continued**

*Figure 10. Secure/Stow Highway Emergency Marker Kit.*

- g. Repeat Steps (a) through (f) for remaining marker(s).
  - h. Return emergency marking kit case (10) to stowage box (11).
2. Pull out emergency flasher control (WP 0040) (12).



*Figure 11. Secure/Stow Highway Emergency Marker Kit.*

**END OF TASK**

**END OF WORK PACKAGE**



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**OPERATOR MAINTENANCE  
SLAVE START VEHICLE**

---

**INITIAL SETUP:****Personnel Required**

Operator and Assistant - - - (2)

---

**PREPARE VEHICLES FOR SLAVING PROCEDURE****NOTE**

Report any malfunction requiring Heavy Equipment Transporter (HET) Tractor to be slave started to field level maintenance.

1. Start engine (WP 0045) of slaving (operating) HET Tractor (1).

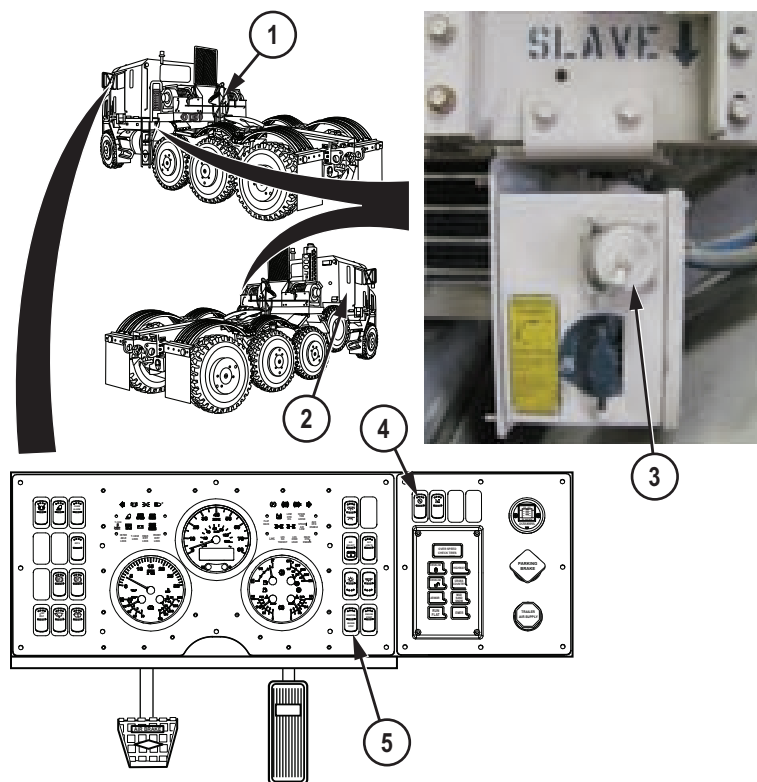
**PREPARE VEHICLES FOR SLAVING PROCEDURE - Continued**

Figure 1. Prepare Vehicles For Slaving Procedure.

**NOTE**

NATO power receptacle on HET Tractor is located below driver side winch deck, to the rear of ladder.

2. Move slaving HET Tractor (1) into position beside disabled vehicle (2) so NATO power receptacles (3) on both vehicles are side-by-side.
3. Park slaving HET Tractor (1) and shut OFF engine (WP 0050).

**CAUTION**

- Slave starting can produce power surges which can damage electrical circuits. Ensure all electrical circuits on both slaving HET Tractor and disabled vehicle are set to OFF position. Failure to comply may result in damage to equipment.

**PREPARE VEHICLES FOR SLAVING PROCEDURE - Continued**

- Ensure CTIS on/off switch is set to OFF position on both slaving HET Tractor and disabled vehicle (if so equipped). Failure to comply may result in damage to equipment.

**NOTE**

Disabled vehicle may have different controls and indicators than HET Tractor (shown). Refer to disabled vehicle operator's manual for location and use of disabled vehicle's controls and indicators.

4. Secure both slaving HET Tractor (1) and disabled vehicle (2) electrical systems:
  - a. Push CTIS on/off switch (WP 0052) (4) up to off position on slaving HET Tractor (1) and disabled vehicle (2) (if so equipped).
  - b. Set all electrical switches to off position on both slaving HET Tractor (1) and disabled vehicle (2).
  - c. Push IGNITION/ENGINE STOP switch (5) down to ENGINE STOP position on both slaving HET Tractor (1) and disabled vehicle (2).

**SLAVE START DISABLED VEHICLE****WARNING****SLAVE STARTING VEHICLE**

- Ensure ENGINE switches on both vehicles are set to OFF position before connecting NATO slave cables. Ensure vehicles are not touching each other. Failure to comply may result in serious injury or death to personnel.
- Remove all jewelry such as rings, dog tags, bracelets, etc., before performing any of following steps in slave start procedure. Failure to comply may result in serious injury or death to personnel.
- Do not smoke, have open flame, or make sparks when slave starting vehicle. Batteries can explode. Failure to comply may result in serious injury or death to personnel.

**SLAVE START DISABLED VEHICLE - Continued****NOTE**

Disabled vehicle may have different stowage than a HET Tractor (shown). Refer to disabled vehicle operator's manual for location of disabled vehicle's stowage.

1. Remove NATO slave cable (1) from stowage of disabled vehicle (2).

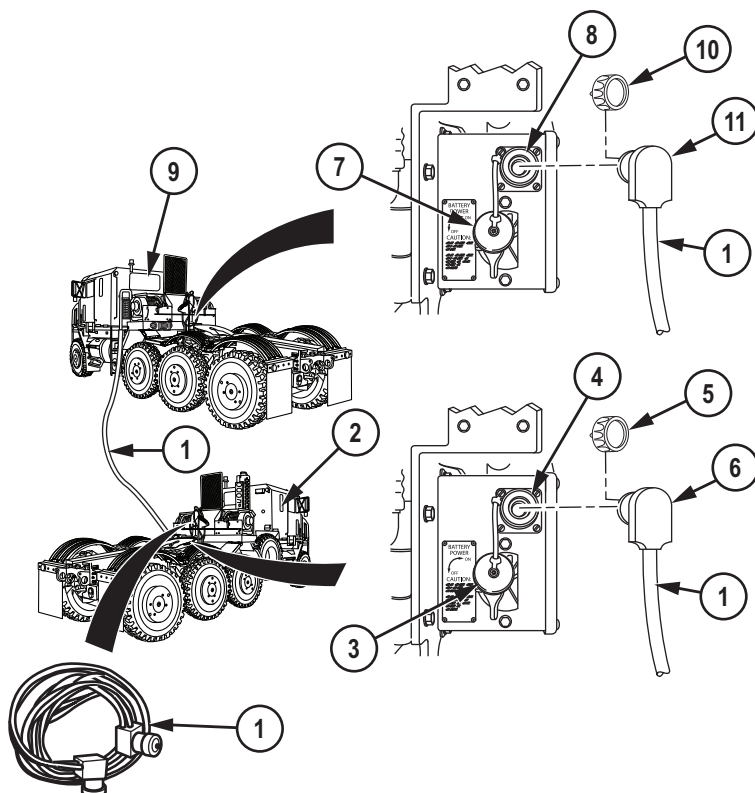


Figure 2. Slave Start Disabled Vehicle.

**CAUTION**

- Ensure connectors and receptacles are free of dirt, sand, and debris. Failure to comply may result in damage to equipment.
- ALWAYS connect NATO slave cable to DISABLED vehicle FIRST, then connect NATO slave cable to slaving HET Tractor. Failure to comply may result in damage to equipment.

2. Remove cap (3) from NATO power receptacle (4) of disabled vehicle (2).



**SLAVE START DISABLED VEHICLE - Continued**

3. Remove cap (5) from NATO slave cable plug (6).
4. Insert NATO slave cable plug (6) into NATO power receptacle (4) of disabled vehicle (2).

**CAUTION**

- Ensure connectors and receptacles are free of dirt, sand, and debris. Failure to comply may result in damage to equipment.
  - ALWAYS connect NATO slave cable to DISABLED vehicle (2) FIRST, then connect NATO slave cable to slaving HET Tractor. Failure to comply may result in damage to equipment.
5. Remove cap (7) from NATO power receptacle (8) of slaving HET Tractor (9).
  6. Remove cap (10) from NATO slave cable plug (11) on free end of NATO slave cable (1).
  7. Insert NATO slave cable plug (11) into NATO power receptacle (8) of slaving HET Tractor (9).
  8. Start engine (WP 0045) of slaving HET Tractor (9).

**NOTE**

Operate engine of slaving HET Tractor at 1000 rpm until disabled vehicle is started.

9. Have assistant attempt to start engine of disabled vehicle (2).
10. When engine of disabled vehicle (2) is running smoothly, remove NATO slave cable plug (6) from NATO power receptacle (4) of disabled vehicle (2).
11. Install cap (5) on NATO slave cable plug (6).
12. Install cap (3) on NATO power receptacle (4) of disabled vehicle (2).
13. Remove NATO slave cable plug (11) from NATO power receptacle (8) of slaving HET Tractor (9).
14. Install cap (10) on NATO slave cable plug (11).
15. Install cap (7) on NATO power receptacle (8) of slaving HET Tractor (9).
16. Stow NATO slave cable (1) in stowage of disabled vehicle (2).
17. Move and park slaving HET Tractor (9).

**SLAVE START DISABLED VEHICLE - Continued**

18. Shut OFF engine (WP 0050) of slaving HET Tractor (9).

**END OF TASK**

**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE**  
**PERFORM IMMEDIATE ACTION FOR LOSS OF AIR SUPPLY SYSTEM PRESSURE**

---

**INITIAL SETUP:**

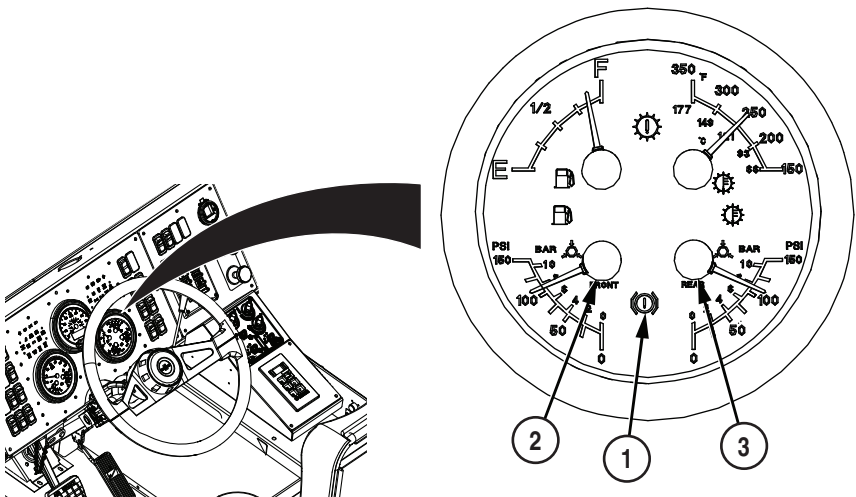
Not Applicable

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**EMERGENCY PROCEDURE****NOTE**

Brake system failure (low air) indicator illuminates (red) and alarm sounds when either FRONT air pressure gauge or REAR air pressure gauge indicates less than 60 psi (4.1 bar).

1. If brake system failure (low air) indicator (1) illuminates (red) and warning alarm sounds while driving Heavy Equipment Transporter (HET) Tractor, check both FRONT air pressure gauge (2) and REAR air pressure gauge (3) to verify air supply system pressure loss.

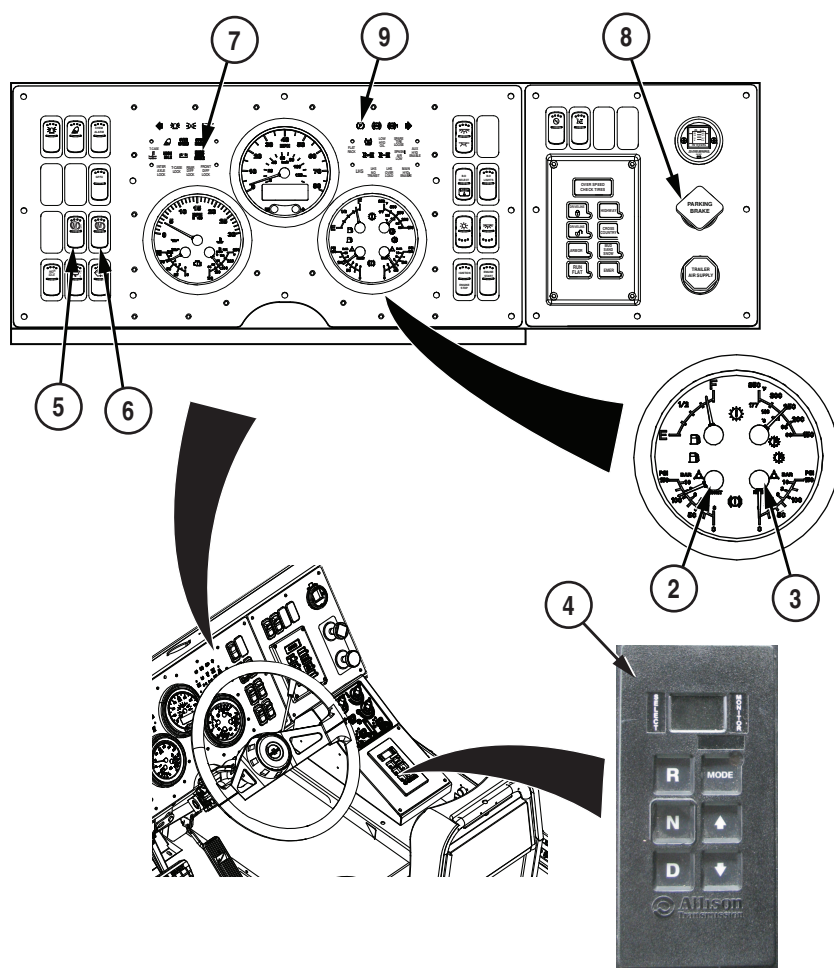


*Figure 1. Check FRONT and REAR Air Pressure Gauges.*

**NOTE**

If both FRONT air pressure gauge and REAR air pressure gauge read less than 60 psi (4.1 bar), skip to Step (6).

2. If REAR air pressure gauge (3) reads less than 60 psi (4.1 bar) and FRONT air pressure gauge (2) reads normal air pressure of 100 to 130 psi (6.9 to 9 bar), perform the following:



a. Look for a place to stop HET Tractor without blocking other traffic.

**EMERGENCY PROCEDURE - Continued****NOTE**

- If rear air pressure is lost, front service brakes will continue to operate normally.
  - Brakes on No. 2, No. 3, and No. 4 axles will operate for only a limited number of service brake pedal applications before spring brakes apply, forcing HET Tractor to stop.
  - Use service brake pedal only when a safe stopping place has been located.
- b. Use transmission range selector (WP 0064) (4) to downshift as necessary when slowing HET Tractor.

**WARNING**

Do not use engine brake retarder in wet, slick, or icy road conditions. Loss of vehicle control could occur. Failure to comply may result in serious injury or death to personnel.

- c. If necessary to slow HET Tractor, push engine brake high/medium/low switch (5) fully down to low position and push engine brake on/off switch (6) up to on position. ENGINE BRAKE ENABLE indicator (7) will illuminate (green).

**NOTE**

When spring brakes are applied, HET Tractor will stop quickly. HET Tractor cannot be driven again until malfunction is repaired and there is enough air supply for operation of service brakes.

- d. When suitable place is found to stop and HET Tractor is sufficiently slowed, pull out PARKING BRAKE control (WP 0049) (8) to apply spring brakes on rear wheels (axles No. 2 and No. 3, and No. 4). Parking brake indicator (9) will illuminate (red).
- e. Check for air system (WP 0010) damage /leaks.

**NOTE**

- If loss of air pressure is result of damaged air spring, perform Step (3).
  - If loss of air pressure is not result of damaged air spring, skip to Step (4).
3. Remove and plug air spring air line (refer to limp home procedure/air spring failure (WP 0084)).
4. Notify field level maintenance.

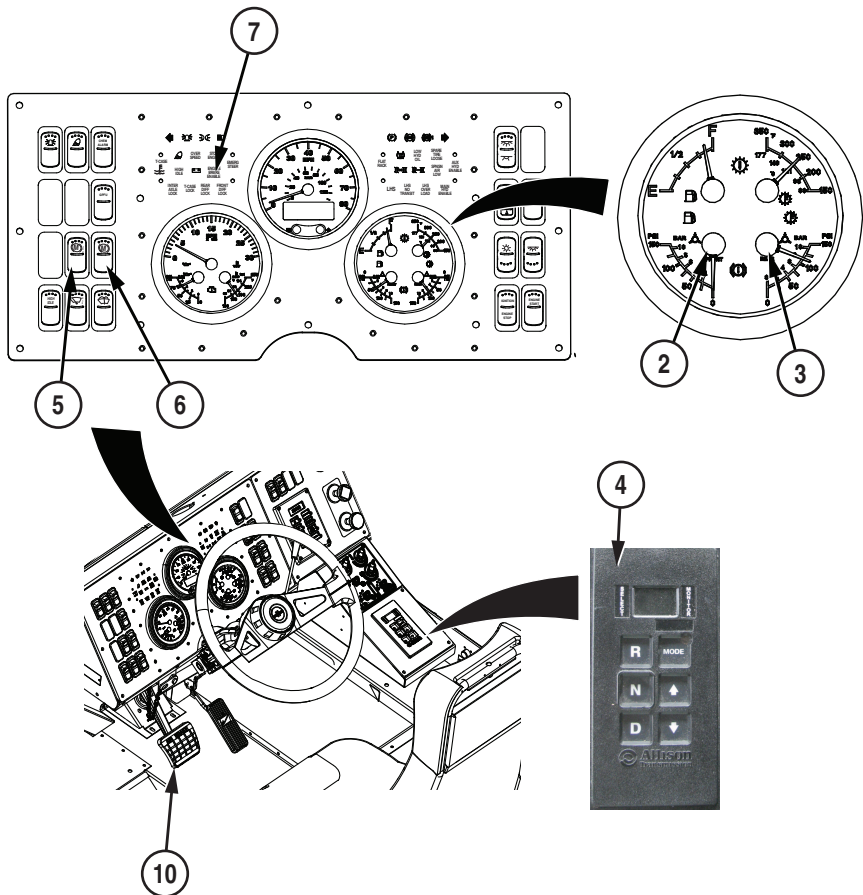
**EMERGENCY PROCEDURE - Continued****WARNING**

Operating Heavy Equipment Transporter (HET) Tractor with an air pressure system loss is dangerous. The HET Tractor has reduced braking capability. Failure to comply may result in serious injury or death to personnel.

**NOTE**

If both FRONT air pressure gauge and REAR air pressure gauge read less than 60 psi (4.1 bar), skip to Step (4).

5. If FRONT air pressure gauge (2) reads less than 60 psi (4.1 bar) and REAR air pressure gauge (3) reads normal air pressure of 100 to 130 psi (6.9 to 9 bar), perform the following:

**EMERGENCY PROCEDURE - Continued**

*Figure 3. FRONT Air Pressure Gauge Reads Zero and REAR Air Pressure Gauge Reads Normal.*

Continue operation of HET Tractor. Brakes on axles No. 2, No. 3, No. 4, and trailer (if applicable) will operate. Braking capabilities will be reduced. Use caution, and comply with the following:

- (1) Allow additional distance between vehicles.
- (2) Apply service brake pedal (WP 0047) (10) earlier than usual when slowing HET Tractor.
- (3) Use transmission range selector (WP 0064) (4) to downshift as necessary when slowing HET Tractor.

**EMERGENCY PROCEDURE - Continued****WARNING**

Do not use engine brake retarder in wet, slick, or icy road conditions. Loss of vehicle control could occur. Failure to comply may result in serious injury or death to personnel.

- (4) If necessary to slow HET Tractor, push engine brake high/medium/low switch (5) fully down to low position and push engine brake on/off switch (6) up to on position. ENGINE BRAKE ENABLE indicator (7) will illuminate (green).
- (5) Notify field level maintenance as soon as possible.

**NOTE**

- Brake system failure (low air) indicator illuminates (red) and alarm sounds when either FRONT air pressure gauge or REAR air pressure gauge indicates less than 60 psi (4.1 bar).
  - Spring brakes will automatically apply if system air pressure drops to approximately 35 to 45 psi (2.4 to 3.1 bar).
  - When spring brakes are applied, HET Tractor will stop quickly. HET Tractor cannot be driven again until malfunction is repaired and there is enough air supply for operation of service brakes.
6. If both FRONT air pressure gauge (2) and REAR air pressure gauge (3) indicate less than 60 psi (4.1 bar) and air pressure is dropping, perform the following:
    - a. Look for a place to stop HET Tractor without blocking other traffic.
    - b. Use transmission range selector (WP 0064) (4) to downshift as needed to control HET Tractor speed until a suitable place is found to stop.



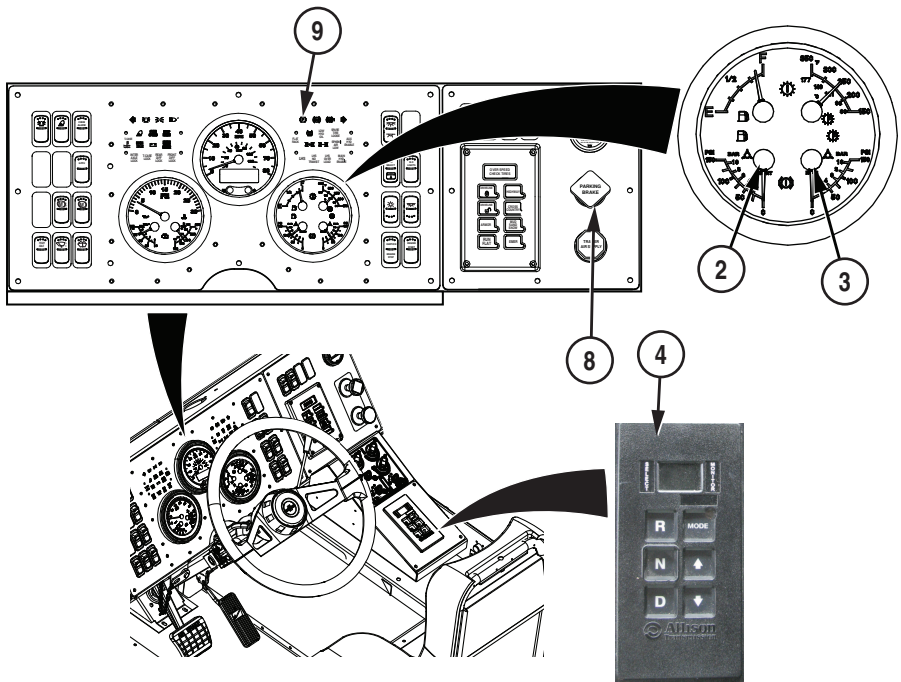
**EMERGENCY PROCEDURE - Continued**

Figure 4. Both FRONT and REAR Air Pressure Gauges Read Zero.

**WARNING**

Use of service brake pedal may not slow or stop Heavy Equipment Transporter (HET) Tractor when both FRONT and REAR air pressure gauges indicate less than 60 psi (4.1 bar). Use the following procedure to safely stop HET Tractor after loss of air pressure. Failure to comply may result in injury or death to personnel.

- c. When suitable place is found to stop, and HET Tractor is sufficiently slowed, pull out PARKING BRAKE control (WP 0049) (8) to apply spring brakes on rear wheels. Parking brake indicator (9) will illuminate (red).
7. Check for air system (WP 0010) damage/leaks.

**NOTE**

- If loss of air pressure is result of damaged air spring, perform Step (8).
- If loss of air pressure is not result of damaged air spring, skip to Step (9).

**EMERGENCY PROCEDURE - Continued**

8. Remove and plug air spring air line (refer to limp home procedure/air spring failure (WP 0084)).
9. Notify field level maintenance.

**END OF TASK****END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE  
MANUALLY RELEASE/APPLY SPRING BRAKES**

---

**INITIAL SETUP:**

Not Applicable

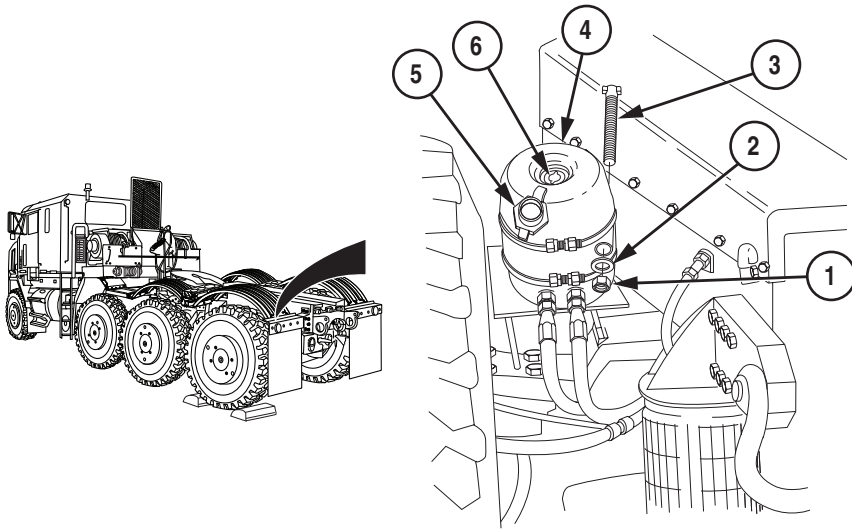
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**RELEASE SPRING BRAKES****WARNING**

Do not operate Heavy Equipment Transporter (HET) Tractor with spring brakes released. HET Tractor will be able to roll free once spring brakes are released. Use wheel chocks, or similar aid, to prevent HET Tractor from moving once spring brakes are released. Failure to comply may result in serious injury or death to personnel.

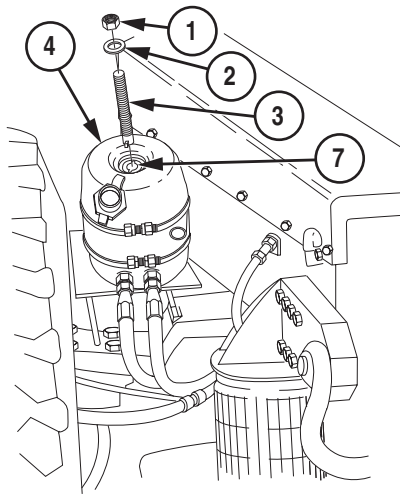
**NOTE**

- Procedures for releasing spring brakes are the same for axles No. 2, No. 3, and No. 4. No. 4 axle shown.
  - There are no spring brakes on axle No. 1.
  - This procedure should only be used when vehicle air system is totally inoperative and HET Tractor cannot be towed with rear end raised by wrecker.
  - Ensure wheel chocks are installed (WP 0036) before beginning this procedure.
1. Turn nut (1) counterclockwise and remove nut (1), washer (2), and tool (3) from mounting position on spring brake chamber (4).

**RELEASE SPRING BRAKES - Continued**

*Figure 1. Release Spring Brakes.*

2. Remove dust cap (5) from access hole (6) in spring brake chamber (4).
3. Insert tool (3) into slot (7) until it stops.



*Figure 2. Release Spring Brakes.*

**RELEASE SPRING BRAKES - Continued**

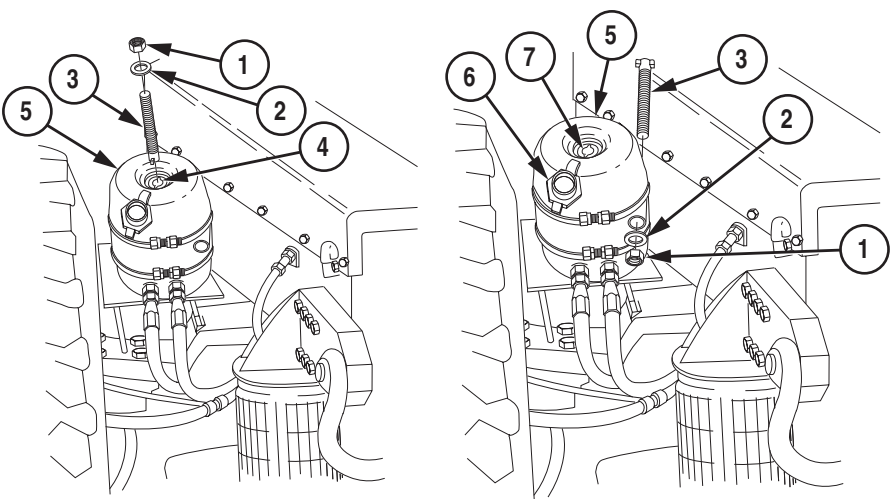
4. Turn tool (3) 1/4 turn clockwise to engage in brake chamber and pull out until tool (3) is seated and stops.
5. Install washer (2) and nut (1) on tool (3).
6. Release brake chamber (4) by tightening nut (1) down until it stops.
7. Repeat Steps (1) through (6) to release five remaining spring brakes on axles No. 4, No. 3, and No. 2.

**APPLY SPRING BRAKES****WARNING**

Install wheel chocks before performing this procedure. Failure to comply may result in serious injury or death to personnel.

**NOTE**

- Procedures for applying spring brakes are the same for axles No. 2, No. 3, and No. 4. No. 4 axle shown.
  - There are no spring brakes on axle No. 1.
  - Ensure wheel chocks are installed (WP 0036) before beginning this procedure.
1. Loosen and remove nut (1) and washer (2) from tool (3).



*Figure 3. Apply Spring Brakes.*

**APPLY SPRING BRAKES - Continued**

2. Push tool (3) down, turn tool (3) 1/4 turn to release from brake chamber, and pull tool (3) out of slot (4) in brake chamber (5).
3. Install dust cap (6) in access hole (7) of spring brake chamber (5).
4. Install tool (3), washer (2), and nut (1) in mounting position on spring brake chamber (5).
5. Turn nut (1) clockwise to tighten.
6. Repeat Steps (1) through (5) to apply the remaining five spring brakes on axles No. 4, No. 3, and No. 2.

**END OF TASK****END OF WORK PACKAGE**

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**OPERATOR MAINTENANCE  
MOVEMENT TRACKING SYSTEM (MTS) POWER CONVERTER FAILURE**

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**INITIAL SETUP:**

Not Applicable

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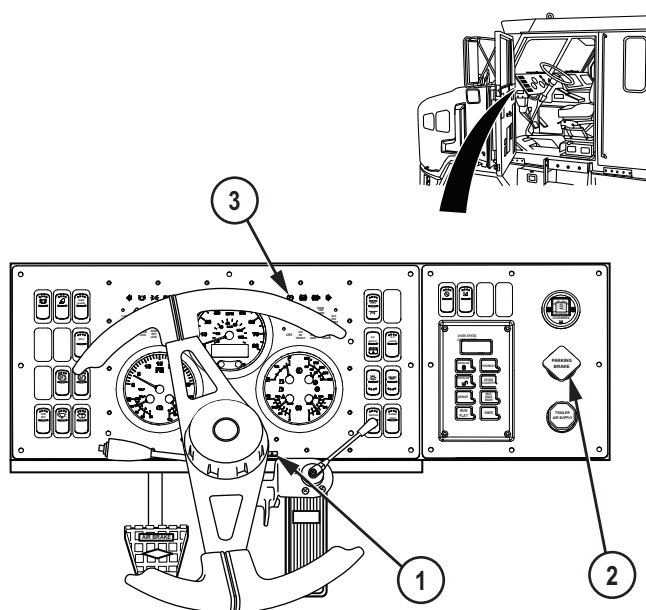
**MTS POWER CONVERTER FAILURE**

**NOTE**

- The MTS power converter is part of the C4ISR kit installed in some Heavy Equipment Transporter (HET) Tractors.
- Not all HET Tractors are equipped with the C4ISR kit, and kit installation locations may vary. Standard installation shown.
- Follow these instructions only if the C4ISR kit is installed on your vehicle.
- Indications of a possible problem with the MTS power converter include loss of power to the MTS mobile unit, and smoke, heat, and/or ozone smell coming from the MTS power converter box.

If a problem with the MTS power converter is indicated, perform the following Steps:

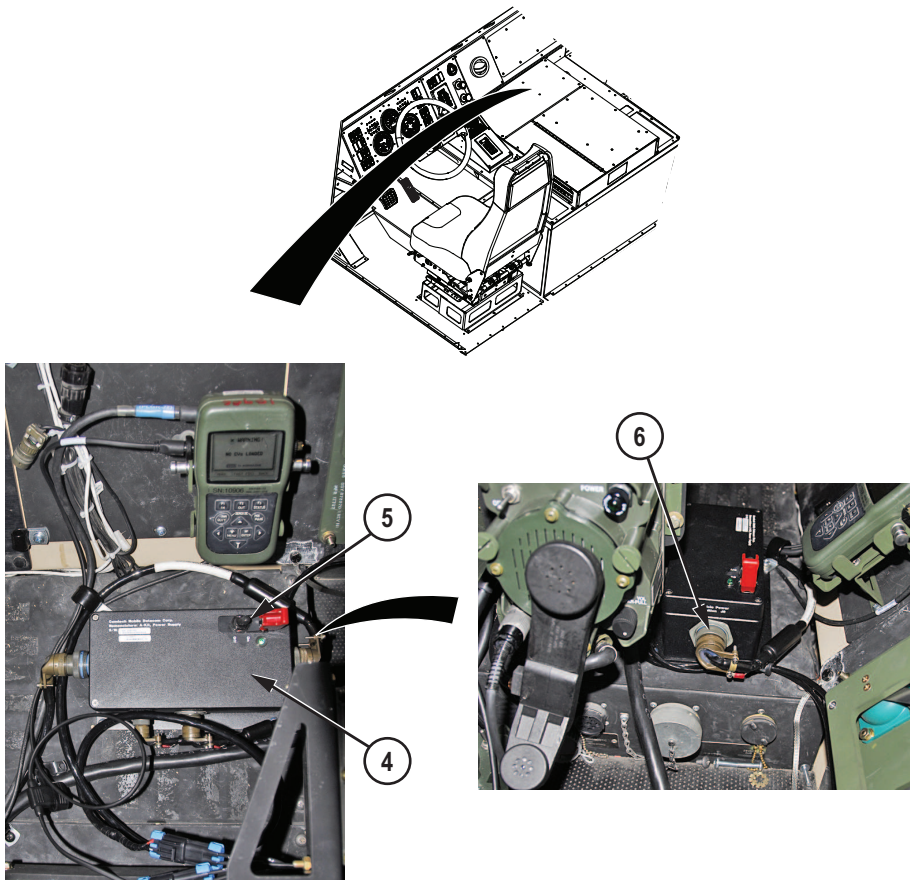
1. If HET Tractor is in motion, bring vehicle to a stop in a safe location.
2. Push in emergency flasher control (1) to activate emergency flashers. (WP 0040)

**MTS POWER CONVERTER FAILURE - Continued**

*Figure 1. MTS Power Converter Failure.*

3. Pull out PARKING BRAKE control (WP 0049) (2) to apply parking brakes. Parking brake indicator (3) will illuminate (red).
4. Shut engine OFF. (WP 0050)
5. Exit vehicle, leaving doors open to ventilate cab.
6. Verify that MTS power converter box (4) is the source of smoke or odor.



**MTS POWER CONVERTER FAILURE - Continued**

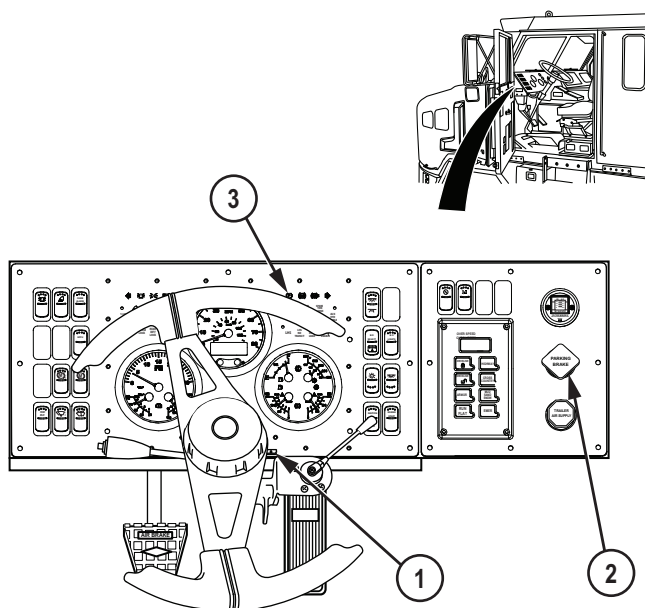
*Figure 2. MTS Power Converter Failure.*

7. When smoke is cleared, re-enter HET Tractor and turn MTS power converter box switch (5) to OFF position.

**CAUTION**

Do not attempt to remove MTS power converter box cover. Failure to comply may result in damage to equipment.

8. Disconnect power cable (6) from MTS power converter box (4).
9. Start engine. (WP 0045)
10. Pull out (turn off) EMERGENCY FLASHER control (1). (WP 0040)

**MTS POWER CONVERTER FAILURE - Continued**

*Figure 3. MTS Power Converter Failure.*

11. Push in PARKING BRAKE control (WP 0049) (2) to release parking brakes. Parking brake indicator (3) will go out.
12. Resume mission.
13. When mission is complete, deliver vehicle to field level maintenance and report problem.

**END OF TASK**

**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE  
LIMP HOME PROCEDURE/TRANSMISSION FAULT**

---

**INITIAL SETUP:**

Not Applicable

---

**CAUTION**

If transmission range selector flashes current range selection while operating Heavy Equipment Transporter (HET) Tractor (shift selection is inhibited), DO NOT shut OFF engine (WP 0050) or attempt to change range selection (WP 0064). Shutting off engine may result in the inability to select a drive range at startup, and diagnostic data may be lost. Move vehicle to safe place and notify field level maintenance as soon as possible.

**NOTE**

When transmission oil temperature is below 19°F (-7°C), the only gears available are R (reverse), N (neutral), and 3 (third gear range) when D (drive) is selected. The remaining six gears in D (drive) will not be available until transmission oil in sump warms above 19°F (-7°C).

1. If check transmission indicator (1) illuminates (amber) when operating HET Tractor, apply service brake pedal (WP 0047) (2) and stop HET Tractor.

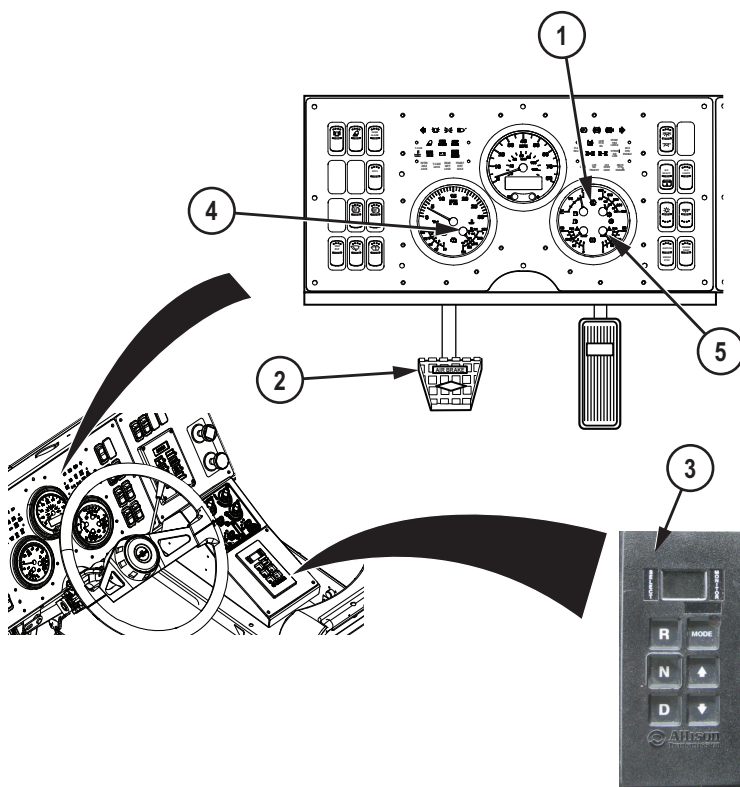


Figure 1. Limp Home Procedure/Transmission Fault.

### NOTE

DO NOT shift transmission to N (neutral).

2. Set transmission range selector (WP 0064) (3) to R (reverse):
  - a. If HET Tractor shifts into R (reverse):
    - (1) Set transmission range selector (WP 0064) (3) to appropriate forward range.
    - (2) Continue with mission, and notify field level maintenance when mission is completed.
  - b. If HET Tractor DOES NOT shift into R (reverse):

### NOTE

Once the engine is turned off, HET Tractor will not be operable until the problem is corrected.

- (1) The transmission may be locked into a specific gear, and may not come out of that gear until engine is shut off.

### **WARNING**

When operating Heavy Equipment Transporter (HET) Tractor in transmission limp home mode, the operator must not rely on the parking brake to hold HET Tractor in place. The service brakes must also be applied. Failure to comply may result in injury or death to personnel.

### **NOTE**

Consider the following guidelines carefully with regard to type of mission, environment, terrain, etc., when deciding on whether to: continue the mission; deadline; or return HET Tractor to field level maintenance.

- (2) No additional damage to the transmission will occur. The operator can continue to operate HET Tractor in limp home mode and complete mission. However, the operator must be aware of the following guidelines:
  - (a) DO NOT shut OFF engine (WP 0050) until the decision is made to deadline HET Tractor. Once the engine is shut off, HET Tractor will not be operable until the problem is corrected.
  - (b) As the engine cannot be shut off and the transmission is locked into gear, the operator will not be able to leave the cab until HET Tractor is deadlined.
  - (c) HET Tractor will not be able to operate in R (reverse).
  - (d) Depending on gear range the transmission is locked into, the HET Tractor may not be able to climb steep grades.
  - (e) The service brake pedal (WP 0047) (2) may need to be applied slightly earlier than normal when stopping HET Tractor.

### **CAUTION**

If overheating occurs when operating in transmission limp home mode, stop HET Tractor (do not shut OFF engine), and allow transmission and engine to cool down to normal operating levels. If engine and transmission do not cool down, or overheating recurs, shut OFF engine (WP 0050) and notify field level maintenance. Failure to comply may result in damage to equipment.

- (f) Depending upon the gear range the transmission is locked into and the terrain the HET Tractor is operating in, the engine and/or

transmission may overheat. Closely monitor the engine coolant temperature gauge (4) and transmission oil temperature gauge (5).

- (g) Notify field level maintenance as soon as possible.

**END OF TASK**

**END OF WORK PACKAGE**

---

## OPERATOR MAINTENANCE

### LIMP HOME PROCEDURE/AIR SPRING FAILURE

---

#### INITIAL SETUP:

##### Tools and Special Tools

Goggles, Industrial (WP 0138, Table 2)

##### Tools and Special Tools (cont.)

Plug, Limp Home (WP 0137, Table 3, Item 33)

Wrench, Adjustable, 8 in. (WP 0137, Table 3, Item 46)

#### CAUTION

Do not operate Heavy Equipment Transporter (HET) Tractor with more than one air spring disabled per side. Failure to comply may result in damage to equipment.

#### NOTE

Limp home procedure is used after failure of an air spring.

1. Shut OFF engine. (WP 0050)
2. Install wheel chocks (WP 0036) (1).

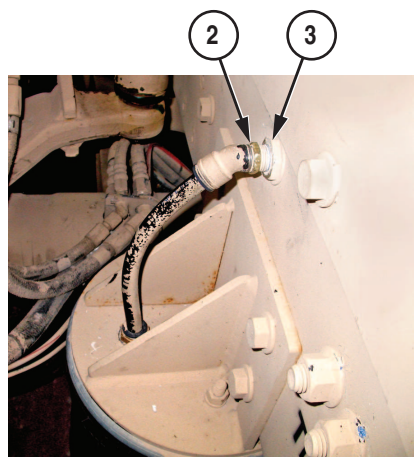
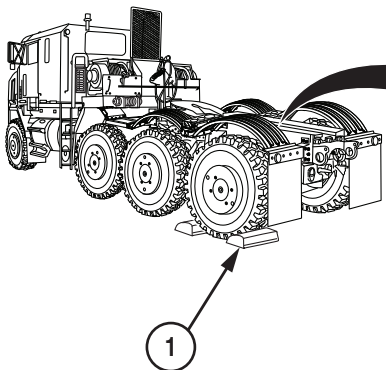
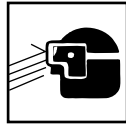


Figure 1. Limp Home Procedure/Air Spring Failure.

**WARNING****AIR SUSPENSION SYSTEM**

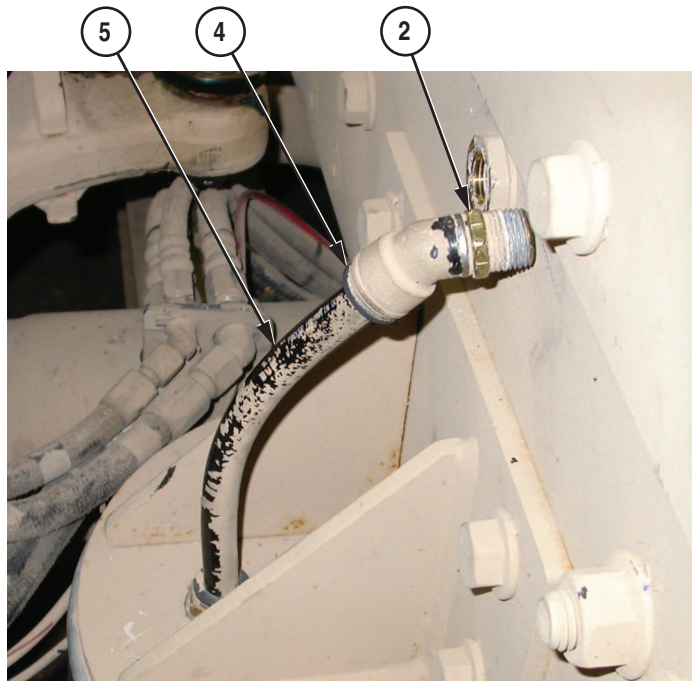
- Air suspension system may still be pressurized even though air pressure gauges in cab read 0 psi (0 bar). Wear eye protection when performing limp home procedure. Failure to comply may result in serious injury or death to personnel.
- Remove fitting slowly to allow air to escape. Failure to comply may result in fitting or air line blowing off causing serious injury or death to personnel.
- Air suspension will drop when fitting is removed. Stay clear of suspension and area between fender and tire. Perform limp home procedure on air spring from below HET Tractor or above frame. Failure to comply may result in serious injury or death to personnel.

**NOTE**

All limp home plugs are installed the same way. No. 4 axle driver side shown.

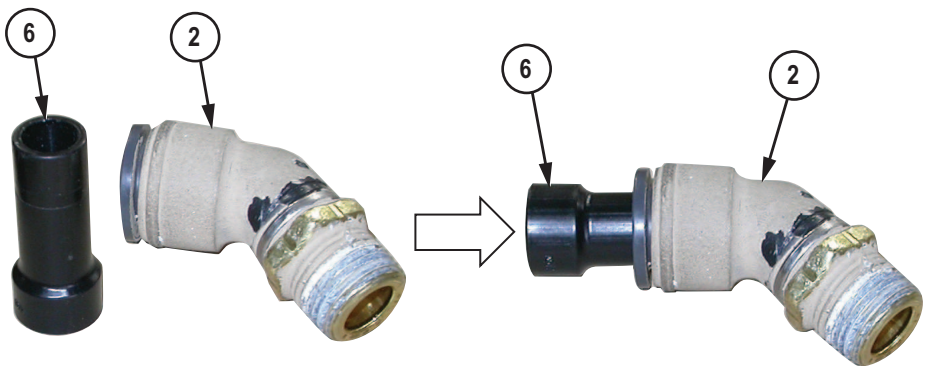
3. Remove fitting (2) from fitting (3).
4. Push fitting retainer (4) against fitting (2) and remove air line (5) from fitting (2).





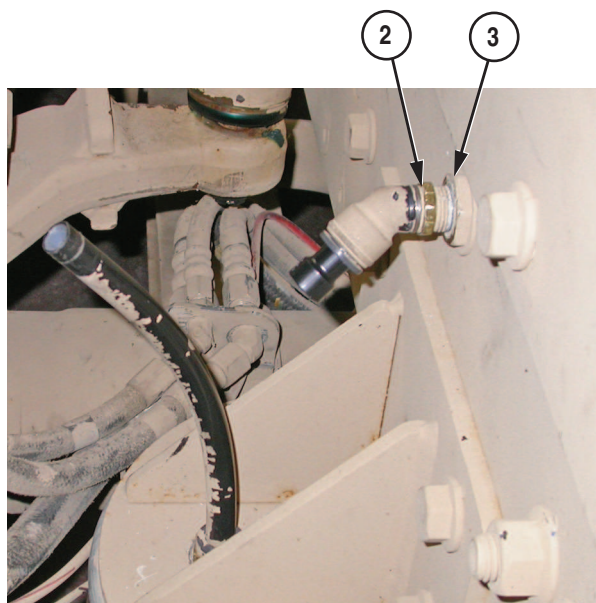
*Figure 2. Limp Home Procedure/Air Spring Failure.*

5. Insert limp home plug (6) in fitting (2).



*Figure 3. Limp Home Procedure/Air Spring Failure.*

6. Install fitting (2) in fitting (3).



*Figure 4. Limp Home Procedure/Air Spring Failure.*

7. Remove wheel chocks (1).

**END OF TASK**

**END OF WORK PACKAGE**

## **OPERATOR MAINTENANCE STOWAGE AND SIGN GUIDE**

---

### **Scope**

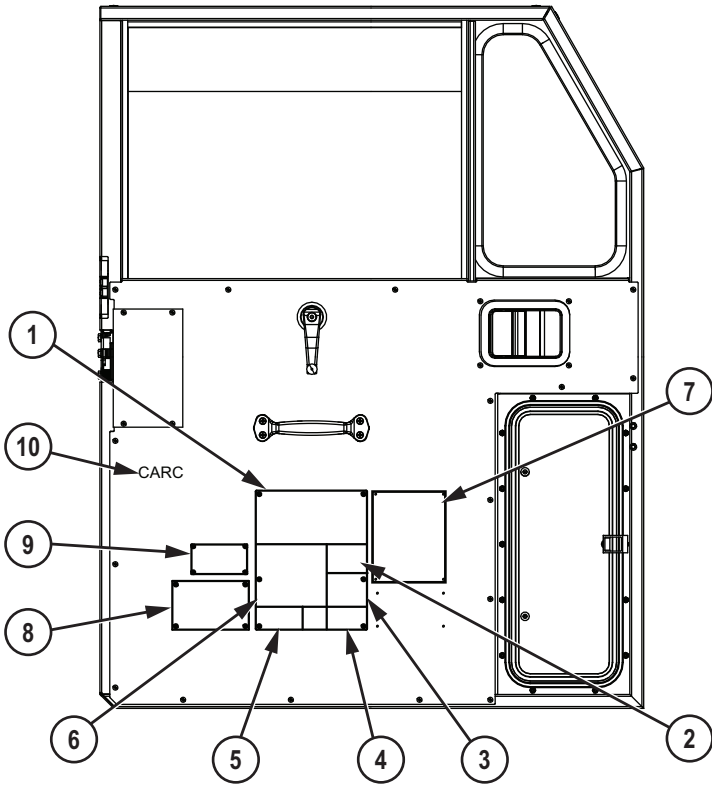
This work package shows locations for data plates, decals, and stencils that are required to be in place on the Heavy Equipment Transporter (HET) Tractor.

### **General**

The following figures and tables show the location of data plates, decals, and stencils used on the HET Tractor. Most of these signs and stencils contain cautions or information needed to operate the vehicle safely. For stowage locations of Components Of End Item (COEI) and Basic Issue Items (BII), refer to Components of End Item and Basic Issue Items tables. (WP 0137)

General - Continued

Table 1. Inside Driver Side Door.

	
INDEX	LABEL/STENCIL
1	Manufacturer's Certification Information (Part of Vehicle Data Label (WP 0027, Table 1))
2	Tire Inflation Data (Part of Vehicle Data Label (WP 0027, Table 1))
3	Warranty Information (Part of Vehicle Data Label (WP 0027, Table 1))
4	Rustproofing NOTICE (Part of Vehicle Data Label (WP 0027, Table 1))
5	Rustproofing Data (Part of Vehicle Data Label (WP 0027, Table 1))

**General - Continued****Table 1. Inside Driver Side Door - Continued.**

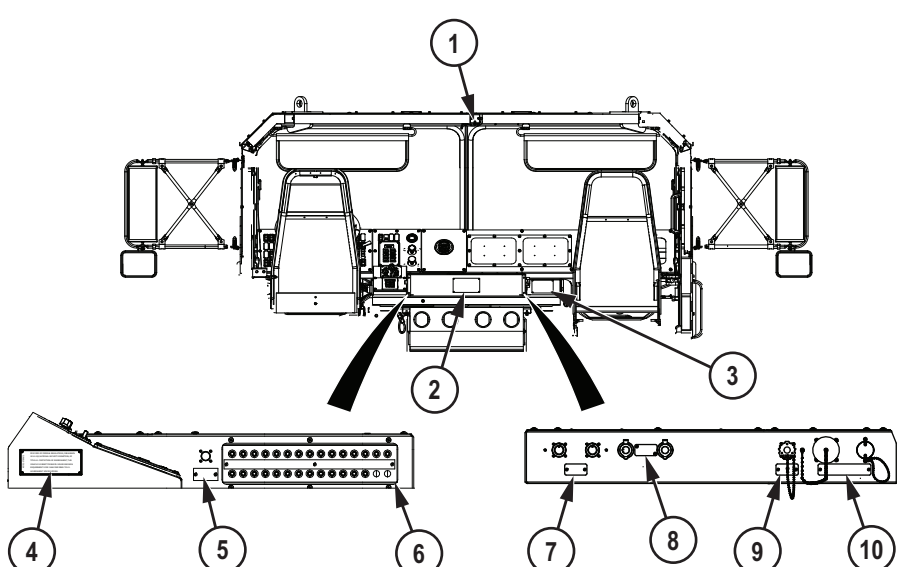
6	Parts Data (Part of Vehicle Data Label (WP 0027, Table 1))
7	Pre Operational Maintenance Label (WP 0027, Table 2)
8	Shipping Data Label (WP 0027, Table 3)
9	Unit Identification Label (WP 0027, Table 4)
10	"CARC" Stencil

**Table 2. Inside Driver Side Door (equipped with armor).**

VIEW NOT AVAILABLE AT TIME OF PUBLICATION	
INDEX	LABEL/STENCIL
1	Manufacturer's Certification Information (Part of Vehicle Data Label (WP 0027, Table 1))
2	Tire Inflation Data (Part of Vehicle Data Label (WP 0027, Table 1))
3	Warranty Information (Part of Vehicle Data Label (WP 0027, Table 1))
4	Rustproofing NOTICE (Part of Vehicle Data Label (WP 0027, Table 1))
5	Rustproofing Data (Part of Vehicle Data Label (WP 0027, Table 1))
6	Parts Data (Part of Vehicle Data Label (WP 0027, Table 1))
7	Pre Operational Maintenance Label (WP 0027, Table 2)
8	Shipping Data Label (WP 0027, Table 3)
9	Unit Identification Label (WP 0027, Table 4)
10	"CARC" Stencil

General - Continued

Table 3. M1070 A1 HET Tractor Cab (Interior).

	
INDEX	LABEL
1	Seat Belt WARNING Label (WP 0027, Table 5)
2	Seat Belt WARNING Label (WP 0027, Table 6)
3	Seat Belt WARNING Label (WP 0027, Table 7)
4	Noise Exemption Information Label (WP 0027, Table 8)
5	WORKLIGHT Label (WP 0027, Table 9)
6	Circuit Breaker Callout Label (WP 0027, Table 10)
7	24VDC-20AMP CB7/CB8 Label (WP 0027, Table 11)
8	12VDC AUX Label (WP 0027, Table 12)
9	DIAGNOSTIC Label (WP 0027, Table 13)
10	12VDC AUX Label (WP 0027, Table 13)

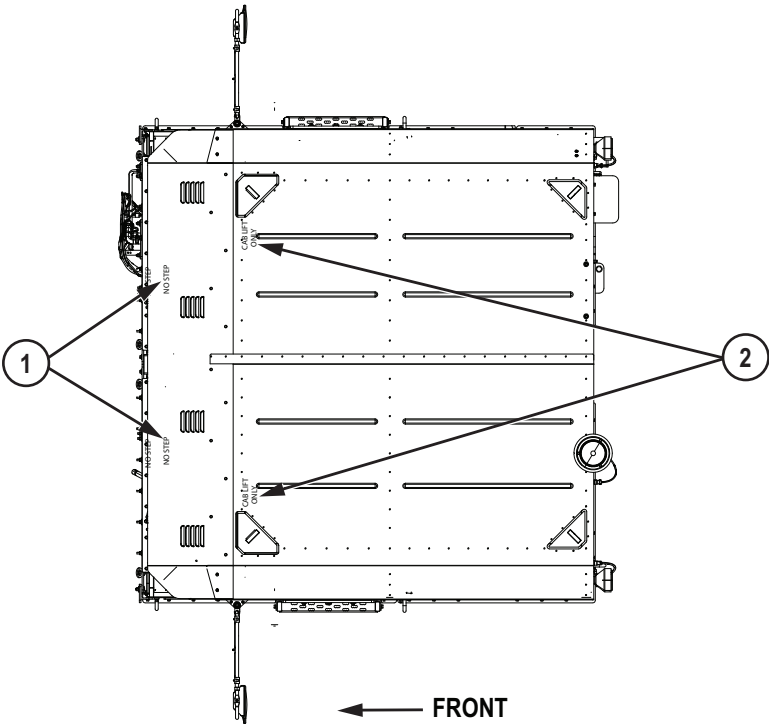
General - Continued

**Table 3. M1070 A1 HET Tractor Cab (Interior) - Continued.**

10	STE-ICE/24VDC AUX Label (WP 0027, Table 14)
<div></div> <p><b>NOTE</b></p> <p>Driver side and passenger side seats have decals associated with same adjustment controls. Driver side seat shown.</p>	
INDEX	DECAL
11	Height Adjustment Instructions Decal (WP 0027, Table 15)
12	Seat Suspension WARNING Decal (WP 0027, Table 16) (Driver Side Seat Only)
13	Seat Information Decal
14	Ride Adjustment Decal

General - Continued

Table 4. M1070 A1 HET Tractor Cab (Top).

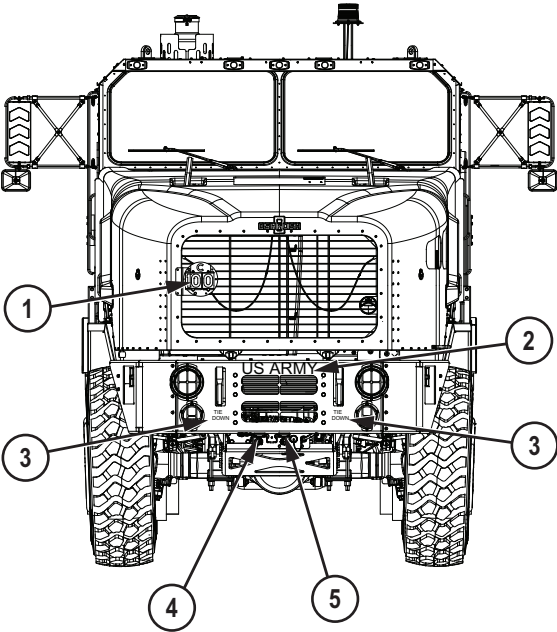


INDEX	STENCIL
1	"NO STEP" Stencil
2	"CAB LIFT ONLY" Stencil



General - Continued

Table 5. M1070 A1 HET Tractor Front Exterior.

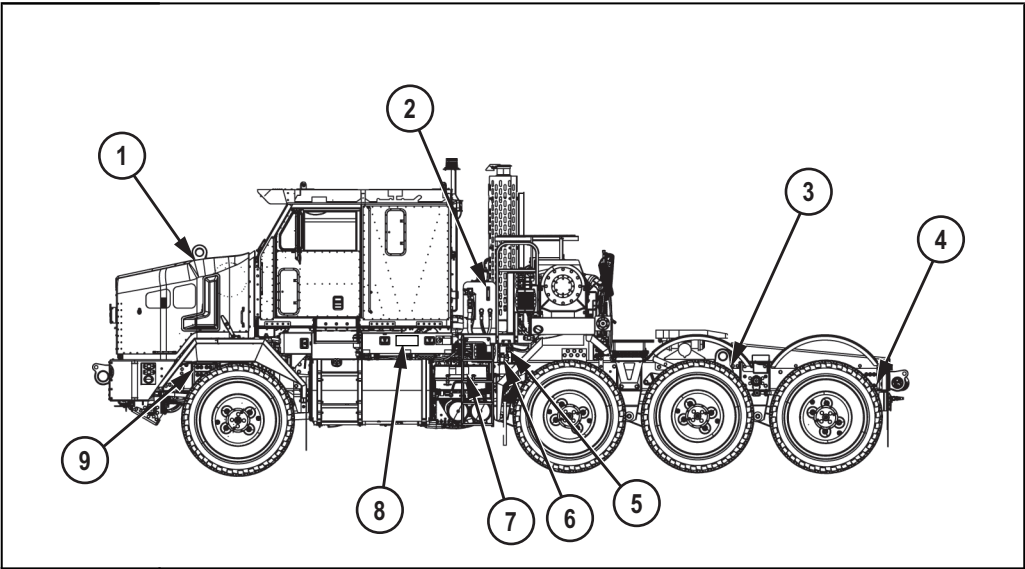
	
INDEX	INDICATOR/LABEL/STENCIL
1	Sign Kit/Weight Indicator (WP 0027, Table 19)
2	"US ARMY" Stencil
3	"TIE DOWN" Stencil
4	SERVICE Label (WP 0027, Table 20)
5	EMERGENCY Label (WP 0027, Table 21)

General - Continued

Table 6. M1070 A1 HET Tractor Front Exterior (equipped with armor).

VIEW NOT AVAILABLE AT TIME OF PUBLICATION	
INDEX	INDICATOR/LABEL/STENCIL
1	Sign Kit/Weight Indicator
2	"US ARMY" Stencil
3	"TIE DOWN" Stencil
4	SERVICE Label (WP 0027, Table 20)
5	EMERGENCY Label (WP 0027, Table 21)

Table 7. M1070 A1 HET Tractor Driver Side Exterior.

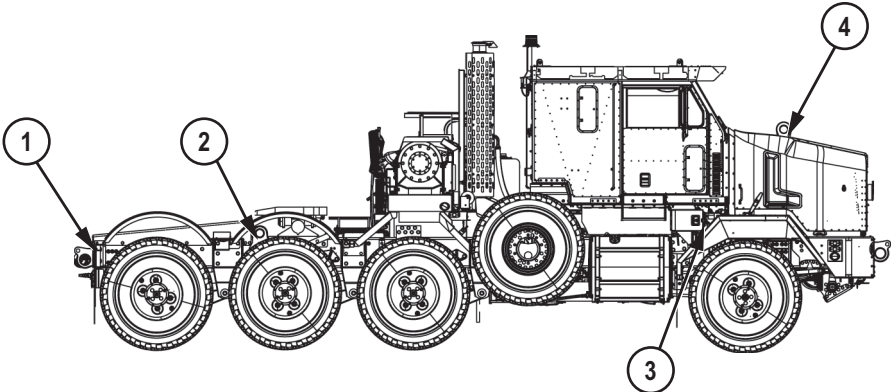
	
INDEX	DECAL/LABEL/STENCIL
1	"LIFT" Stencil

General - Continued

Table 7. M1070 A1 HET Tractor Driver Side Exterior - Continued.

2	"F" and "L" Stencils
3	"LIFT" Stencil
4	"TIE DOWN" Stencil
5	"SLAVE" Stencil
6	Battery Power CAUTION Label (WP 0027, Table 25)
7	Equipment Damage CAUTION Label (WP 0027, Table 23)
8	Noise Hazard WARNING Label (WP 0027, Table 24)
9	Vehicle Identification Number (VIN) Label (WP 0027, Table 26)

Table 8. M1070 A1 HET Tractor Passenger Side Exterior.

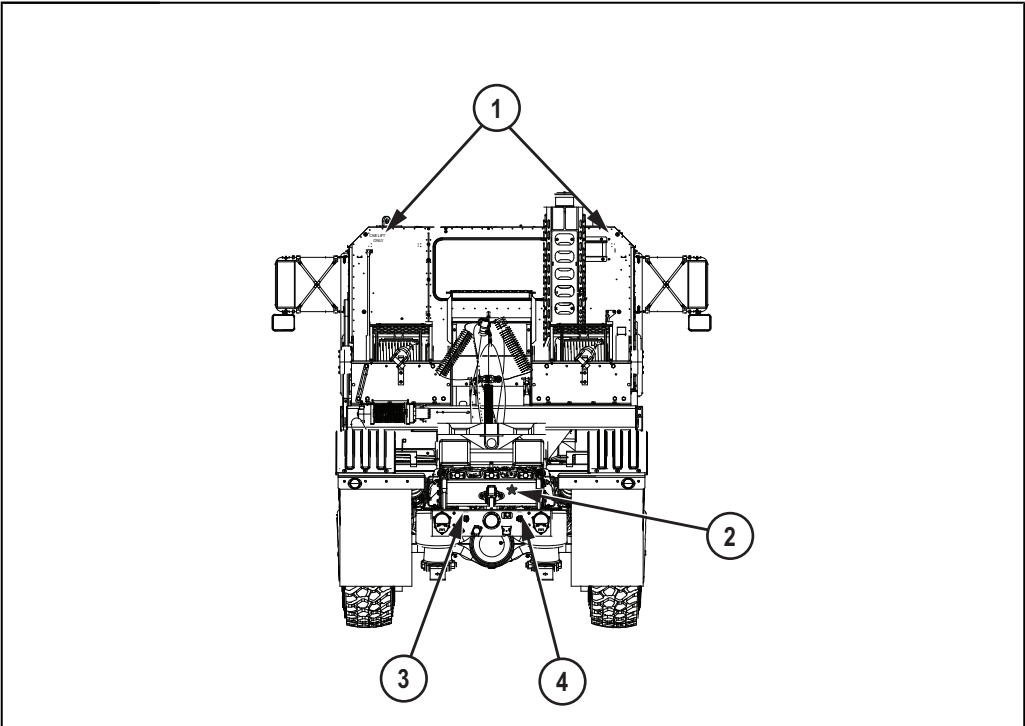
	
INDEX	DECAL/LABEL/STENCIL
1	"TIE DOWN" Stencil
2	"LIFT" Stencil

General - Continued

**Table 8. M1070 A1 HET Tractor Passenger Side Exterior - Continued.**

3	Potential Equipment Damage CAUTION Label (WP 0027, Table 27)
4	"LIFT" Stencil

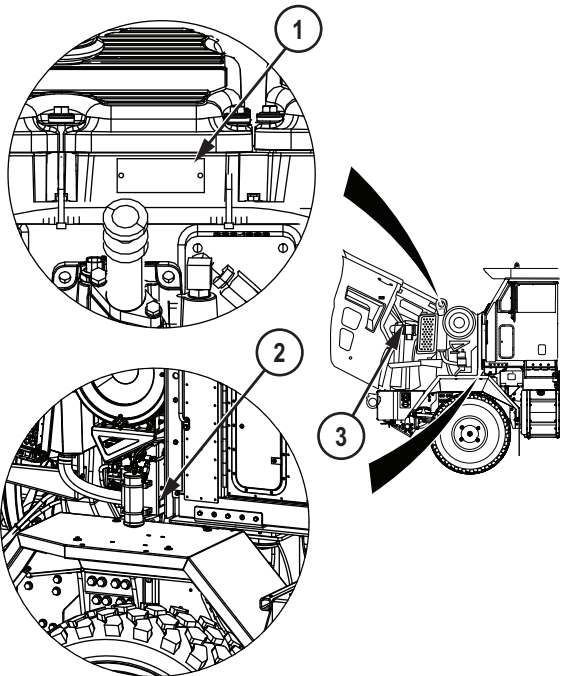
**Table 9. M1070 A1 HET Tractor Rear Exterior.**



INDEX	STENCIL/LABEL
1	"CAB LIFT ONLY" Stencils
2	US Army Star Stencil
3	EMERGENCY Label (WP 0027, Table 21)
4	SERVICE Label (WP 0027, Table 20)

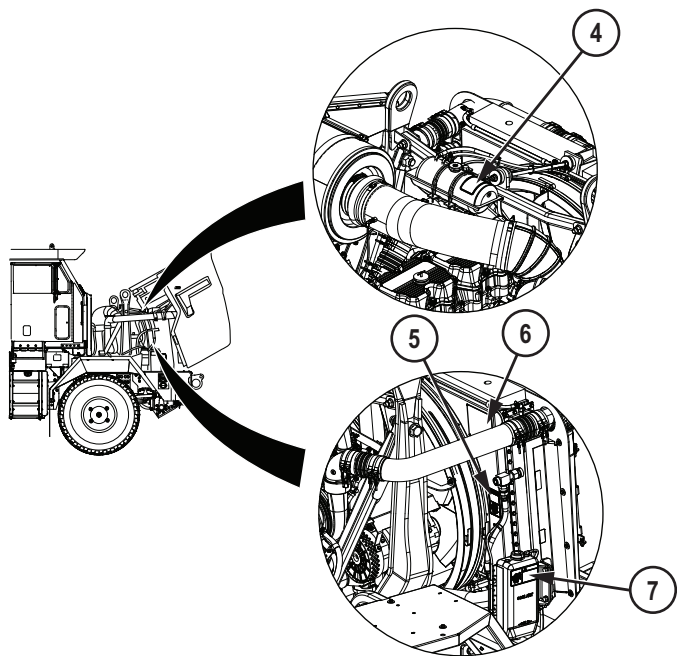
## General - Continued

**Table 10. M1070 A1 HET Tractor Engine Compartment.**

	
INDEX	DECAL/LABEL
1	CAGE, P/N, and S/N Label (WP 0027, Table 28)
2	High Pressure Hazard WARNING/NOTICE Decal (WP 0027, Table 29)
3	Cooling Fan WARNING Decal (WP 0027, Table 31)

General - Continued

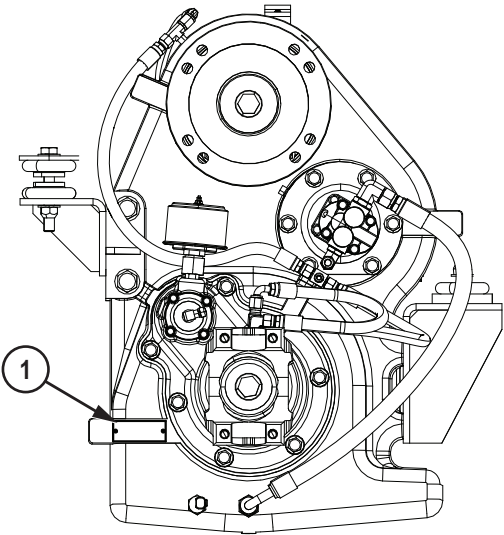
Table 10. M1070 A1 HET Tractor Engine Compartment - Continued.



INDEX	DECAL/LABEL
4	Hot Radiator CAUTION Decal (WP 0027, Table 30)
5	Belt Routing Label (WP 0027, Table 32)
6	Cooling Fan WARNING Decal (WP 0027, Table 31)
7	Hot Radiator CAUTION Decal (WP 0027, Table 30)

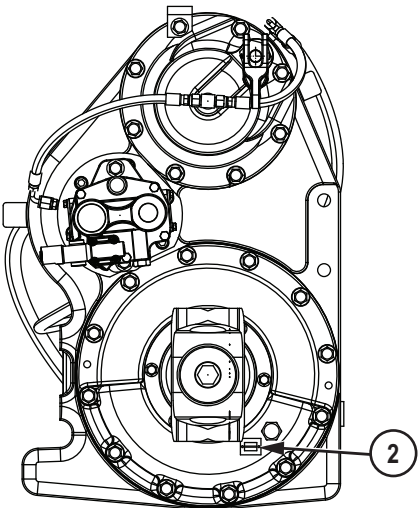
General - Continued

Table 11. M1070 A1 HET Transfer Case.

 <p>FRONT VIEW</p>	
INDEX	LABEL
1	CAGE, P/N, and S/N Label (WP 0027, Table 28)

General - Continued

Table 11. M1070 A1 HET Transfer Case - Continued.



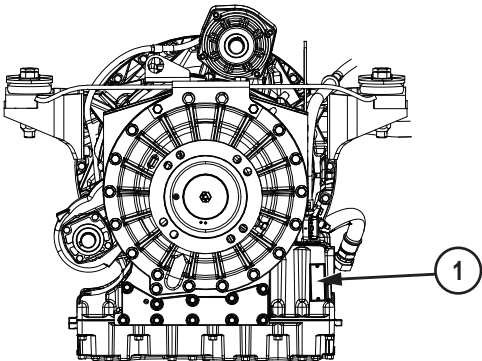
REAR VIEW

INDEX	LABEL
2	Oil Fill Label (WP 0027, Table 33)

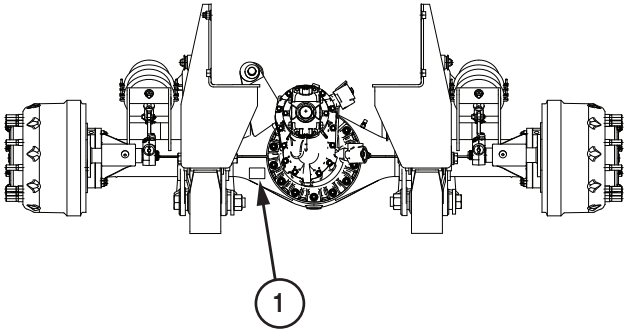


General - Continued

**Table 12. M1070 A1 HET Transmission.**

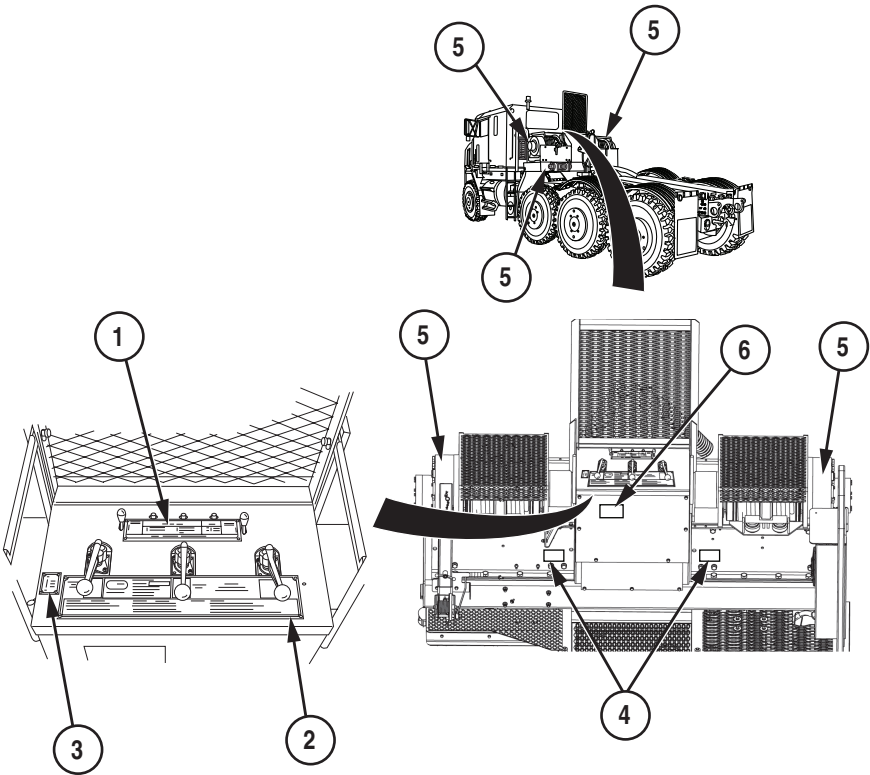
 <p>REAR VIEW</p>	
INDEX	LABEL
1	CAGE, P/N, and S/N Label (WP 0027, Table 28)

**Table 13. M1070 A1 HET Axle Housing.**

	
INDEX	LABEL
1	Axle Information Label (WP 0027, Table 34)

General - Continued

Table 14. M1070 A1 HET Winch Control Panel/Platform.



INDEX	LABEL
1	Winch Controls Label (WP 0027, Table 35)
2	Winch Control Operating Instructions Label (WP 0027, Table 36)
3	Cable Hold Down Label (WP 0027, Table 37)
4	Winch Information Label (WP 0027, Table 38)
5	Winch WARNING Decal (WP 0027, Table 22)

**General - Continued*****Table 14. M1070 A1 HET Winch Control Panel/Platform - Continued.***

6	Winch System Maintenance Label (WP 0027, Table 39)
---	--

**END OF WORK PACKAGE**



## **CHAPTER 3**

# **TROUBLESHOOTING PROCEDURES**



---

**OPERATOR MAINTENANCE  
AIR SYSTEM LOSES PRESSURE DURING OPERATION, OR AIR PRESSURE  
BUILDUP IS SLOW**

---

**INITIAL SETUP:**

**Tools and Special Tools**

Basic Issue Items (BII). (WP 0137)

**Equipment Condition (cont.)**

Parking brakes applied. (WP 0049)

Wheels chocked. (WP 0036)

**Equipment Condition**

Engine OFF. (WP 0050)

---

**TROUBLESHOOTING PROCEDURE**

**AIR SYSTEM LOSES PRESSURE DURING OPERATION, OR AIR PRESSURE  
BUILDUP IS SLOW**

**STEP 1**

**Are air reservoirs, air dryers, air lines, or fittings damaged or leaking?**

**NOTE**

Trailer air supply control must be pulled out to exhaust position, and air lines (glad hands) between truck and trailer must be disconnected prior to performing tests or inspections.

1. Verify that parking brake control (WP 0049) is pulled out to apply parking brakes.

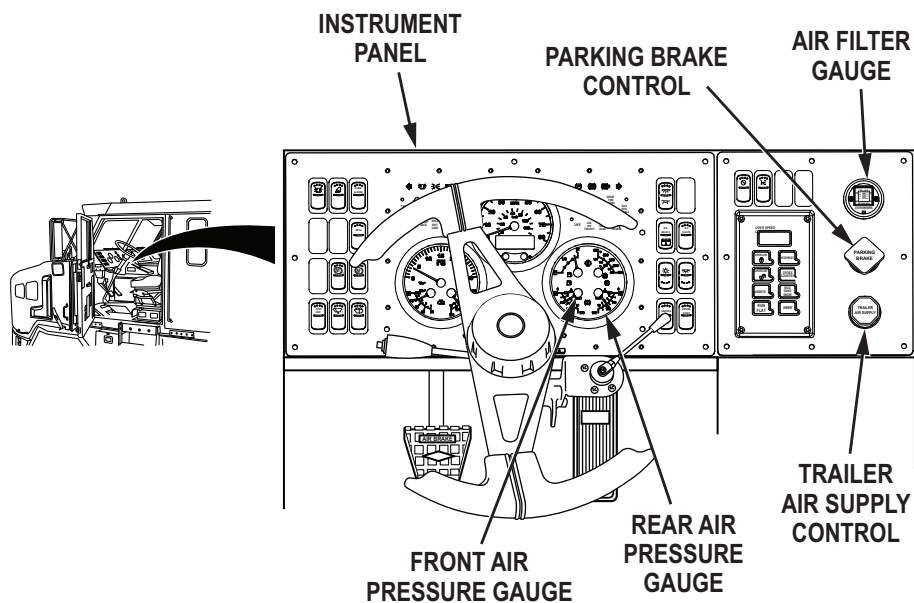
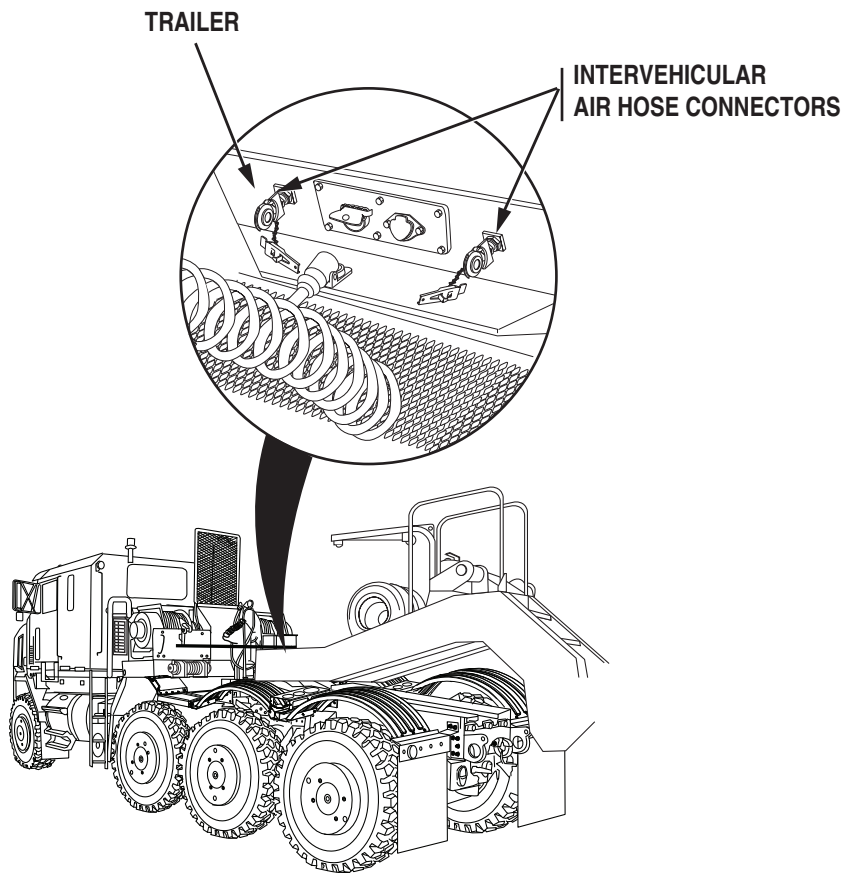


Figure 1. Instrument Panel Air Gauges and Controls.

2. Pull out trailer air supply control to shut off air pressure to trailer brake system.
3. Disconnect air lines (WP 0057) between truck and trailer.





*Figure 2. Intervehicular Air Hoses.*

4. Check four air reservoirs and associated drain valves for leaks and damage.

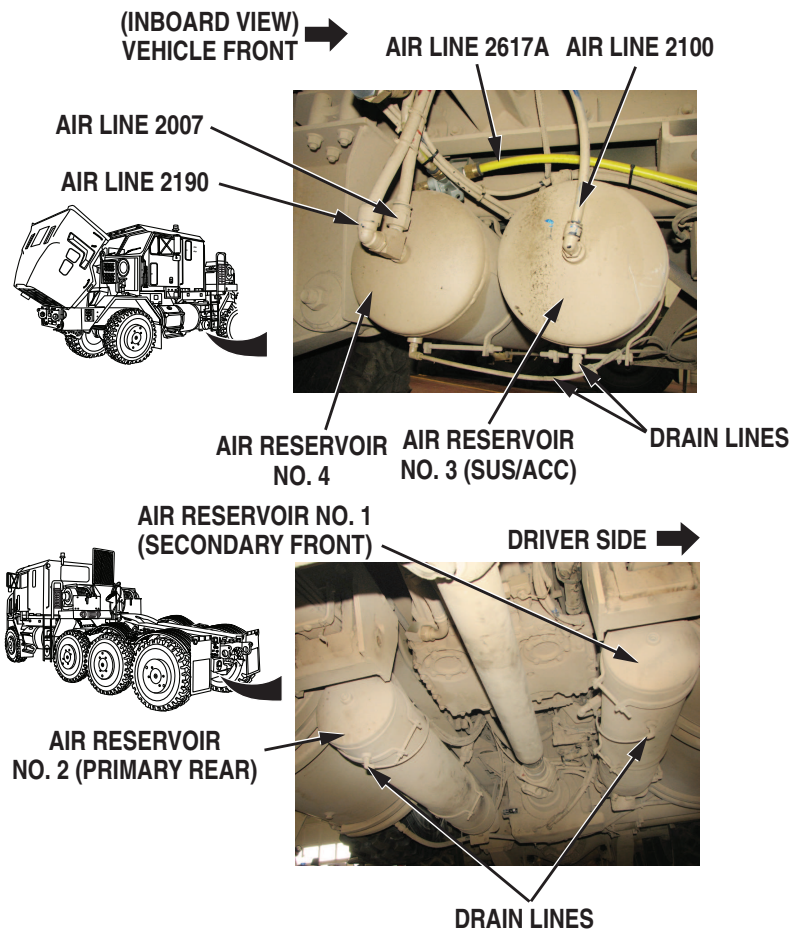


Figure 3. Air Reservoirs and Air Lines.

5. Check air lines and fittings at air reservoirs for leaks and damage.
6. Check air dryer purge reservoir at air reservoir No. 1 and air reservoir No. 2 for leaks and damage.

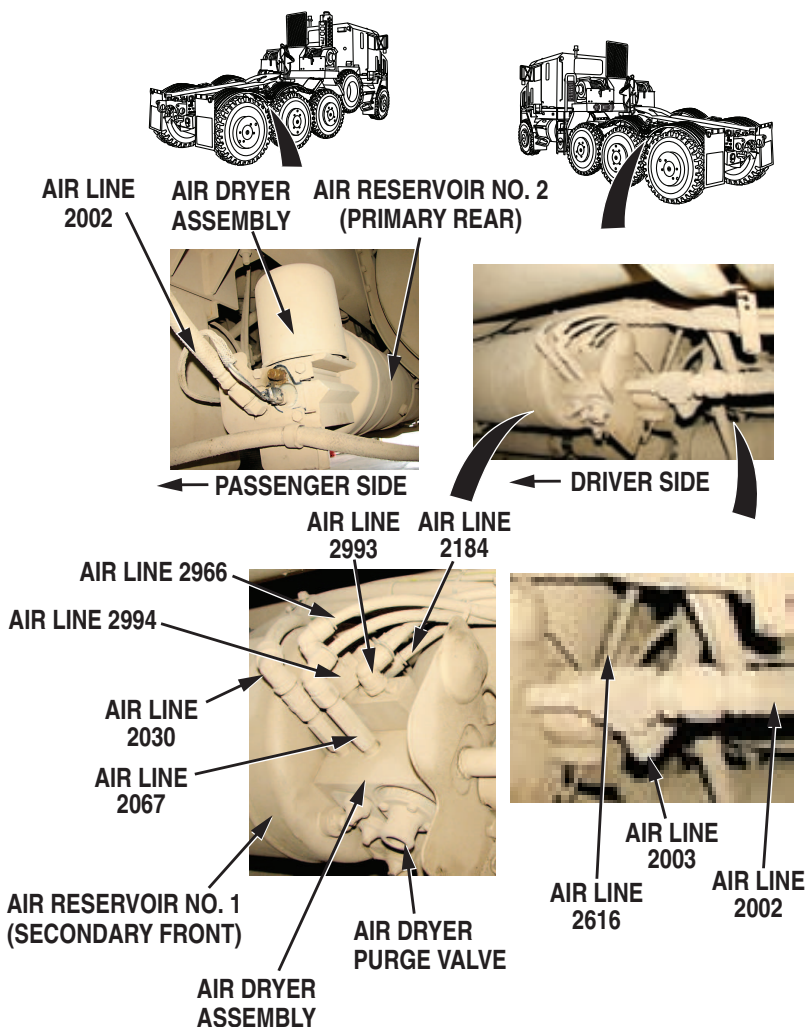


Figure 4. Air Dryers and Air Lines.

T

7. Check air lines and fittings at air dryer purge reservoirs for leaks and damage.
8. Check both air dryers and associated purge valves for leaks and damage.
9. Check air lines and fittings at both air dryers for leaks and damage.
10. Check all remaining air lines and fittings for leaks and damage.

#### CONDITION/INDICATION

Are air reservoirs, air dryers, air lines, or fittings damaged or leaking?

**DECISION**

Leaking and/or damage found in air dryer purge reservoir. - Air dryer purge reservoir(s) leak. Air reservoir drain valve(s) leak. Air dryer purge valve(s) leak. Air line(s) and/or fitting(s) damaged. Air line fittings loose. (Step 2 - Does air pressure build slowly or not hold?) Step 6 - Does air pressure build slowly or not hold?

Leaking and/or damage found in air reservoirs. - Air reservoir(s) leak.

**STEP 2****Does air pressure build slowly or not hold?**

1. Tighten loose air line/hoses connections.
2. Start engine. (WP 0045)
3. Run engine at 1450 to 1500 rpm for at least one minute to allow air pressure to build.

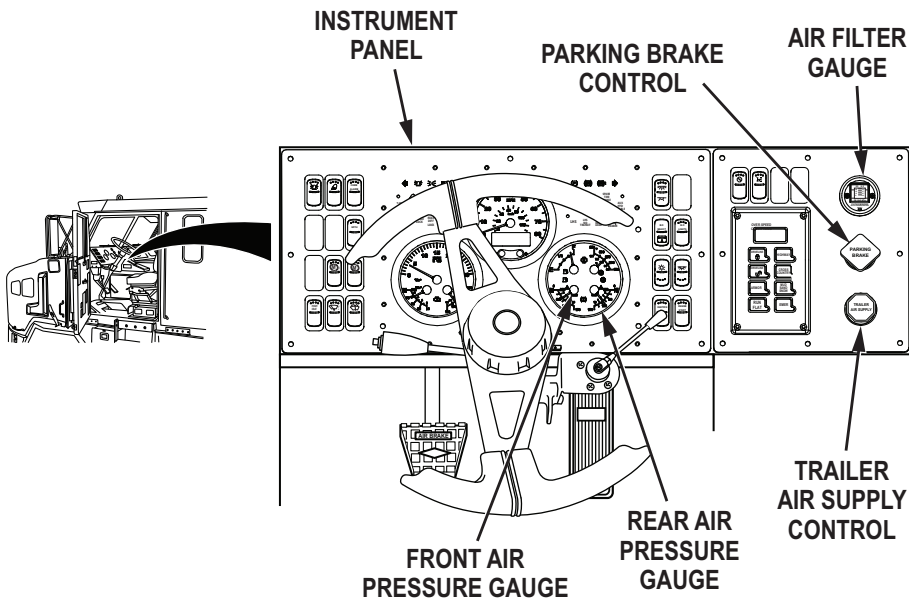


Figure 5. Instrument Panel Air Gauges and Controls.

4. Shut OFF engine. (WP 0050)

**CONDITION/INDICATION**

Does air pressure build slowly or not hold?

**DECISION**

No - Step 3 - Does pressure build up to 120 psi (8.3 bar)?  
 Yes - Problem corrected.

**STEP 3**

**Does pressure build up to 120 psi (8.3 bar)?**

1. Start engine. (WP 0045)
2. Operate engine at 1450 to 1500 rpm to build up air pressure.

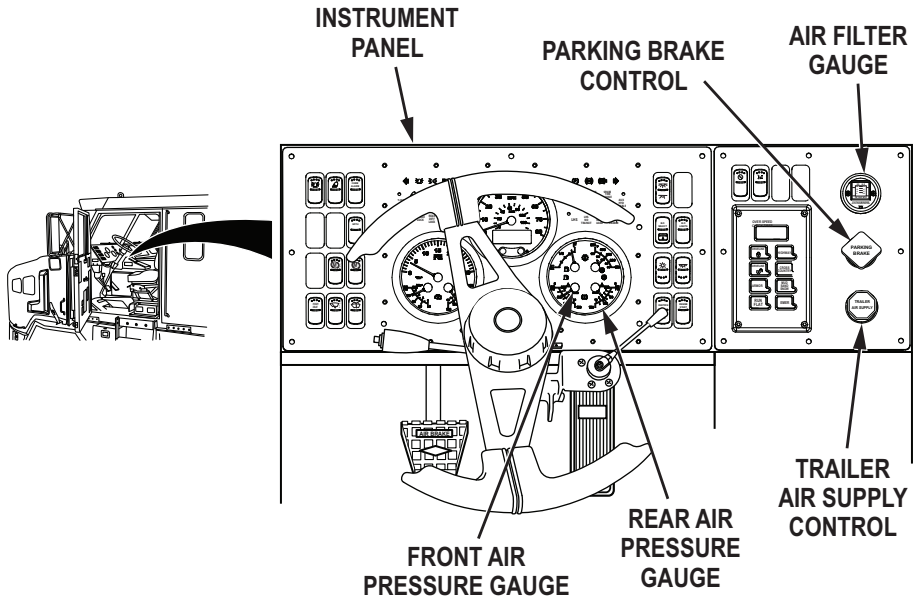


Figure 6. Instrument Panel Air Gauges and Controls.

3. Shut OFF engine. (WP 0050)
  - a. If air pressure reaches 120 psi (8.3 bar), click on **Yes** button.
  - b. If air pressure does not build up to 120 psi (8.3 bar), click on **No** button.

**CONDITION/INDICATION**

Does pressure build up to 120 psi (8.3 bar)?

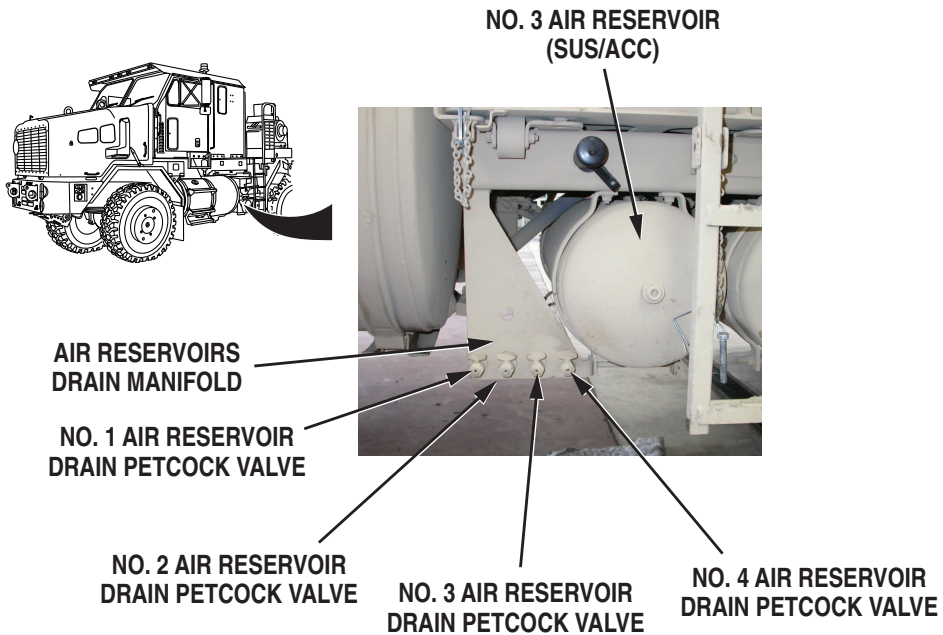
**DECISION**

No - Step 4 - Are air reservoirs, air dryers, air lines and/or fittings leaking when applying service brakes?

Yes - Contact supervisor.

**STEP 4****Are air reservoirs, air dryers, air lines and/or fittings leaking when applying service brakes?**

1. Verify air pressure is at least 120 psi (8.3 bar).
2. While assistant listens for leaks in brake air lines, completely press down service brake pedal.
3. Check four air reservoirs and associated drain valves for leaks and damage.



*Figure 7. Air Reservoir Drain Manifold and Valves.*

4. Check air lines and fittings at air reservoirs for leaks and damage.

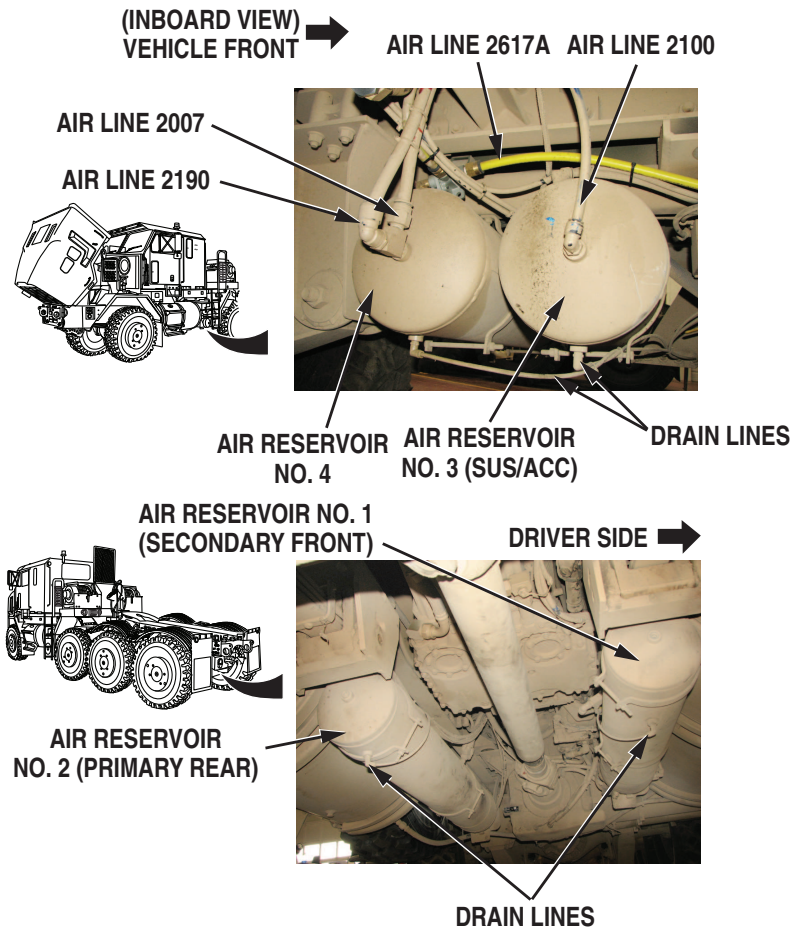


Figure 8. Air Reservoirs and Air Lines.

5. Check two air dryers and associated purge valves for leaks and damage.

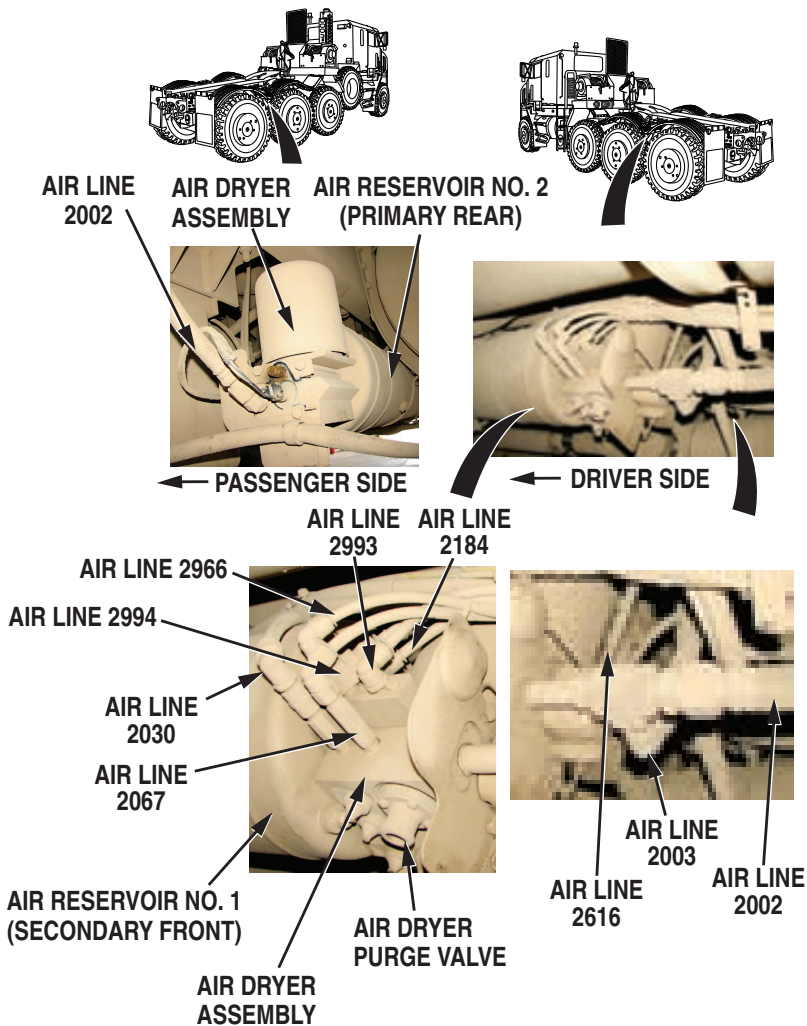


Figure 9. Air Dryers and Air Lines.

6. Check air lines and fittings at air dryers for leaks and damage.
7. Check all remaining air lines and fittings for leaks and damage.

#### CONDITION/INDICATION

Are air reservoirs, air dryers, air lines and/or fittings leaking when applying service brakes?



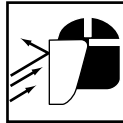
**DECISION**

Leaking found in purge tank. - Purge tank(s) leak. Drain valve(s) leak. Air dryer purge valve(s) leak. Air line fittings leak. (Step 5 - Are leaks still detected after tightening air line fittings?) Step 6 - Does air pressure build slowly or not hold?

Leaks found in air reservoir(s). - Air reservoir(s) leak.

**STEP 5**

**Are leaks still detected after tightening air line fittings?**

**WARNING**

Use care when using high air pressure. Ensure connections and seals are tight before applying pressure. High air pressure can blow out parts, hoses, or debris with force. Personal protective equipment must be used (goggles/shield, gloves, etc.). Failure to comply may result in serious injury or death to personnel.

1. Tighten all leaky line fittings.

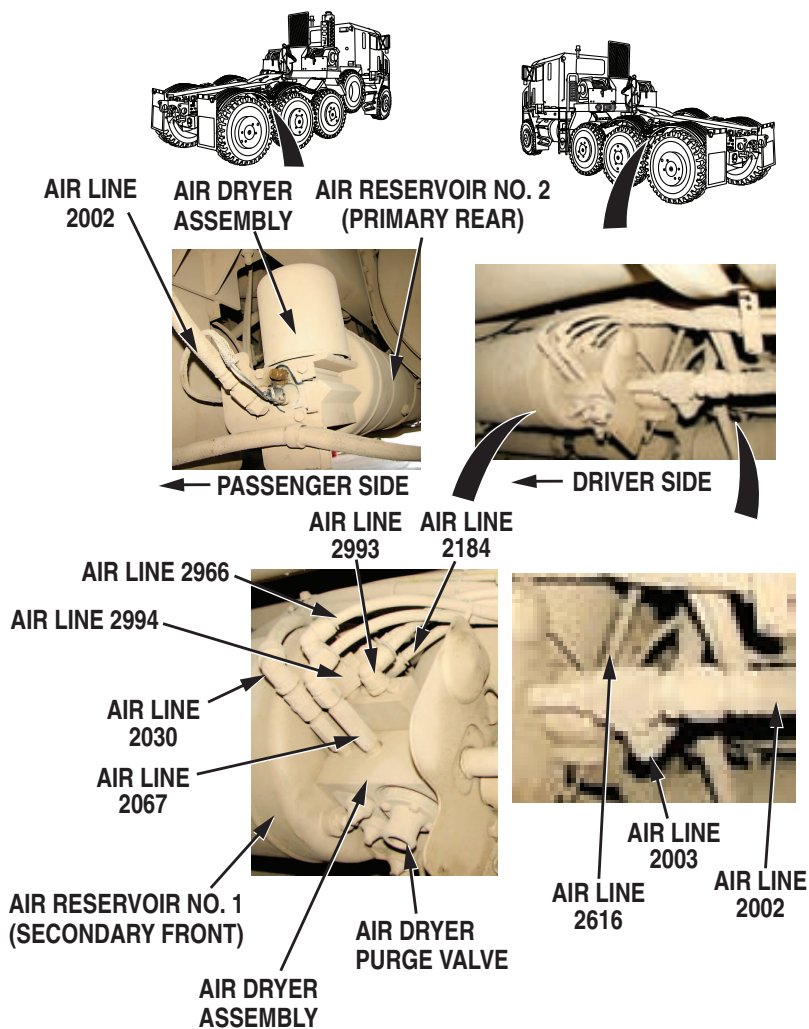


Figure 10. Air Dryers and Air Lines.

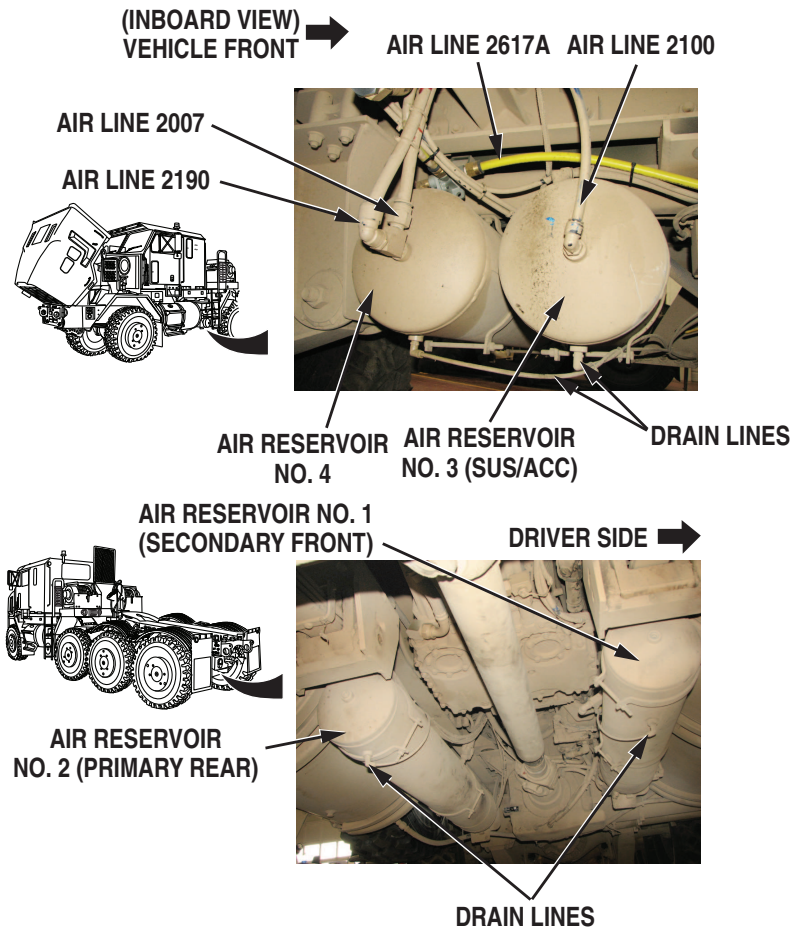


Figure 11. Air Reservoirs and Air Lines.

2. Verify that air pressure is at least 120 psi (8.3 bar).

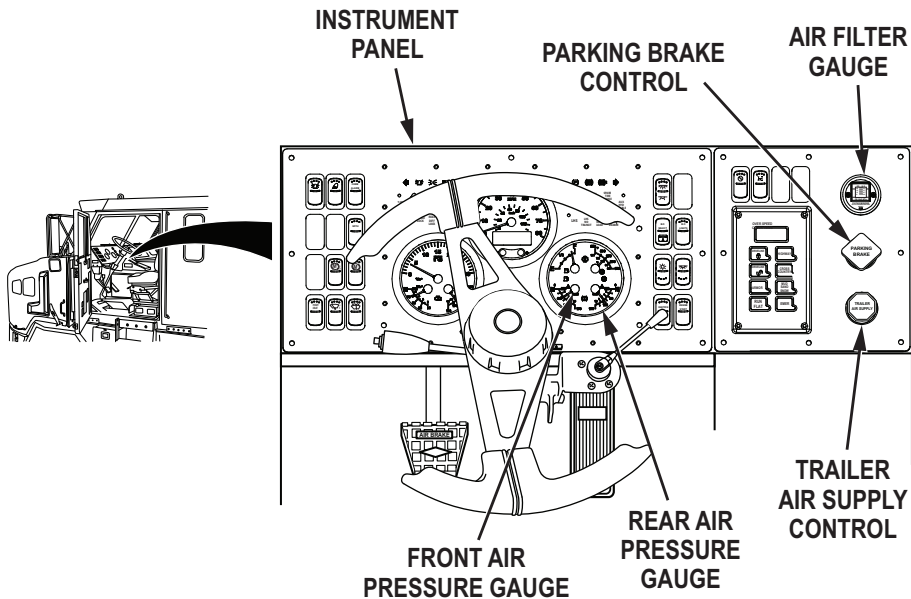


Figure 12. Instrument Panel Air Gauges and Controls.

3. While assistant listens for leaks in brake air lines, completely press down service brake pedal. (WP 0013)

#### CONDITION/INDICATION

Are leaks still detected after tightening air line fittings?

#### DECISION

No - Step 6 - Does air pressure build slowly or not hold?  
 Yes - Contact supervisor.

#### STEP 6

##### Does air pressure build slowly or not hold?

1. Start engine. (WP 0045)
2. Run engine at 1450 to 1500 rpm for at least one minute to allow air pressure to build.
3. Shut OFF engine. (WP 0050)
4. Verify air pressure is at least 120 psi (8.3 bar).

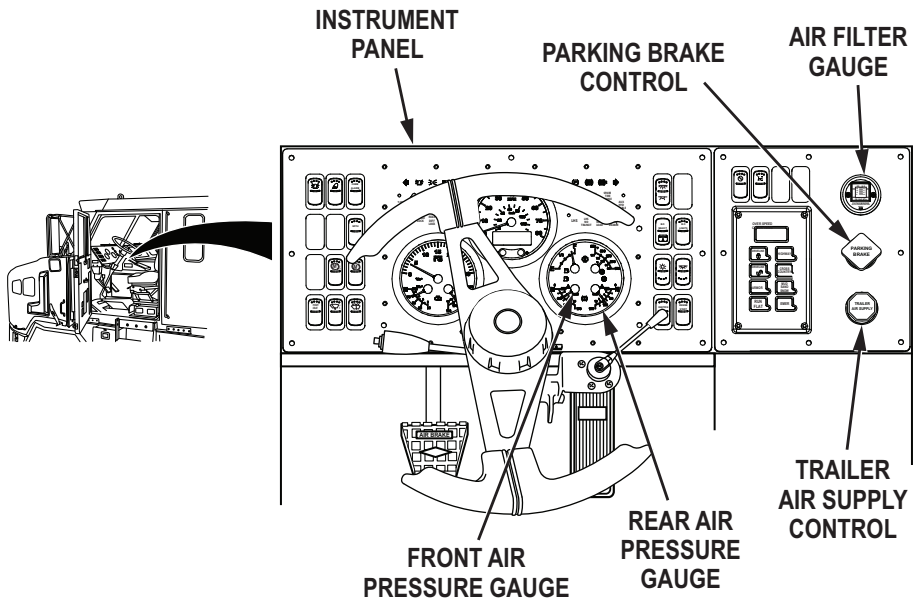


Figure 13. Instrument Panel Air Gauges and Controls.

5. Press service brake pedal down completely.

#### CONDITION/INDICATION

Does air pressure build slowly or not hold?

#### DECISION

No - Contact supervisor.  
Yes - Problem corrected.

#### END OF WORK PACKAGE



---

**OPERATOR MAINTENANCE**

**TRAILER BRAKES WILL NOT OPERATE WHEN SERVICE BRAKE PEDAL, TRAILER  
HANDBRAKE CONTROL, OR PARKING BRAKE CONTROL ARE APPLIED**

---

**INITIAL SETUP:****Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brakes applied. (WP 0016)

Wheels chocked. (WP 0036)

---

**TROUBLESHOOTING PROCEDURE**

**TRAILER BRAKES WILL NOT OPERATE WHEN SERVICE BRAKE PEDAL, TRAILER  
HANDBRAKE CONTROL, OR PARKING BRAKE CONTROL ARE APPLIED**

**STEP 1**

**Is intervehicular air line assembly in good condition?**

**NOTE**

FRONT and REAR air pressure gauges must show a pressure reading of at least 75 psi (5.2 bar). Run engine long enough to either reach this pressure, or determine that this pressure will not be achieved.

1. Verify parking brake control (WP 0049) is pulled out to apply parking brakes.
2. Verify trailer air supply control is pushed in to apply pressure to trailer air connections for this test.
3. Start engine. (WP 0045)

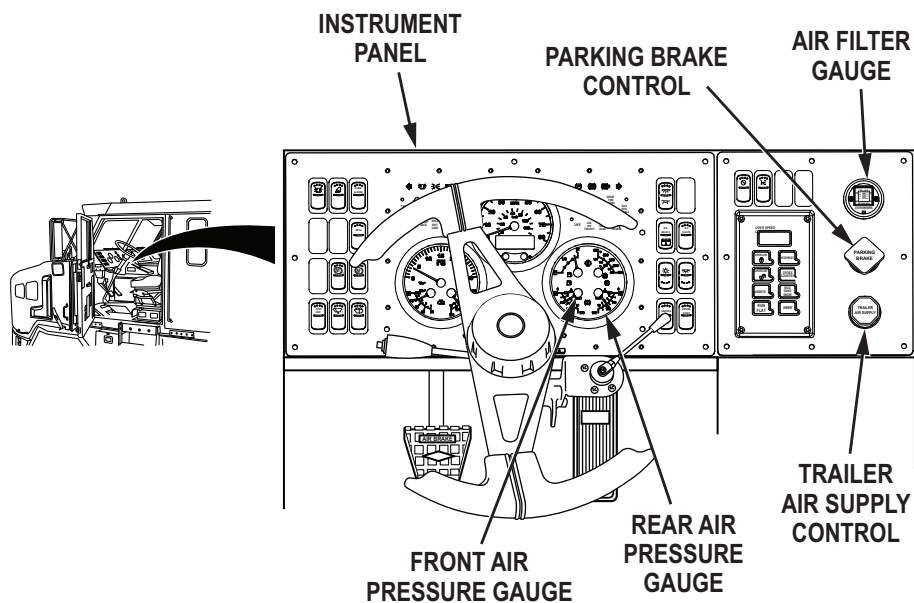
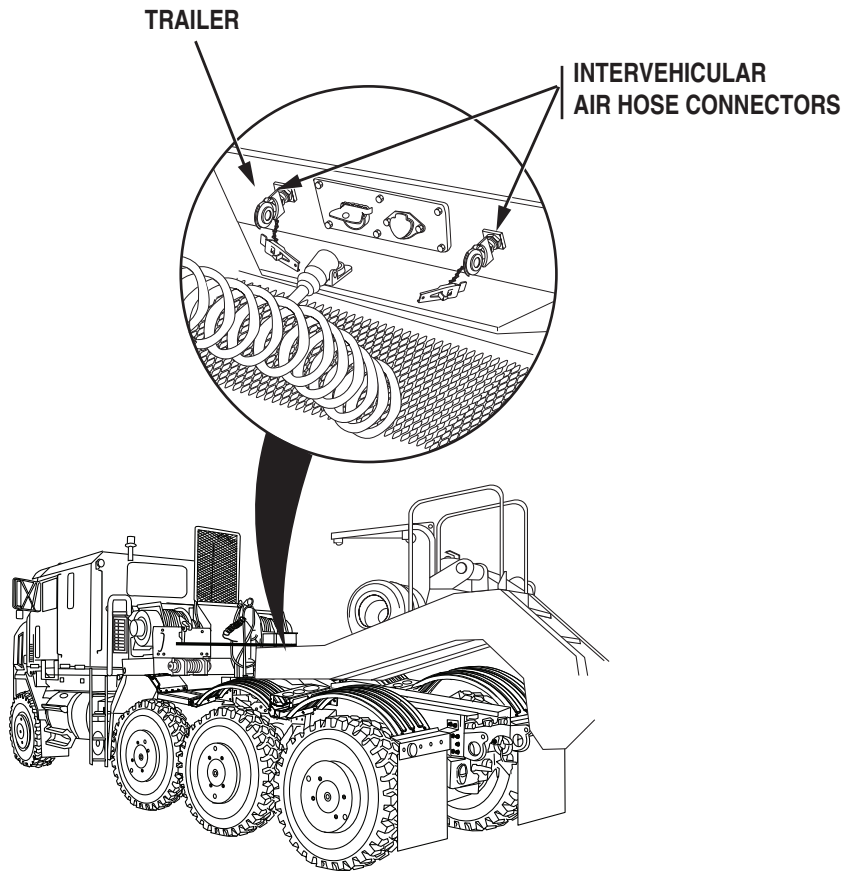


Figure 1. Instrument Panel Air Gauges and Controls.

4. Run engine at 1450 to 1500 rpm for at least one minute to allow air pressure to build.
5. Shut OFF engine. (WP 0050)
6. Check intervehicular air line assembly for secure connections, leaks, and damage.





*Figure 2. Intervehicular Air Hoses.*

### **CONDITION/INDICATION**

Is intervehicular air line assembly in good condition?

### **DECISION**

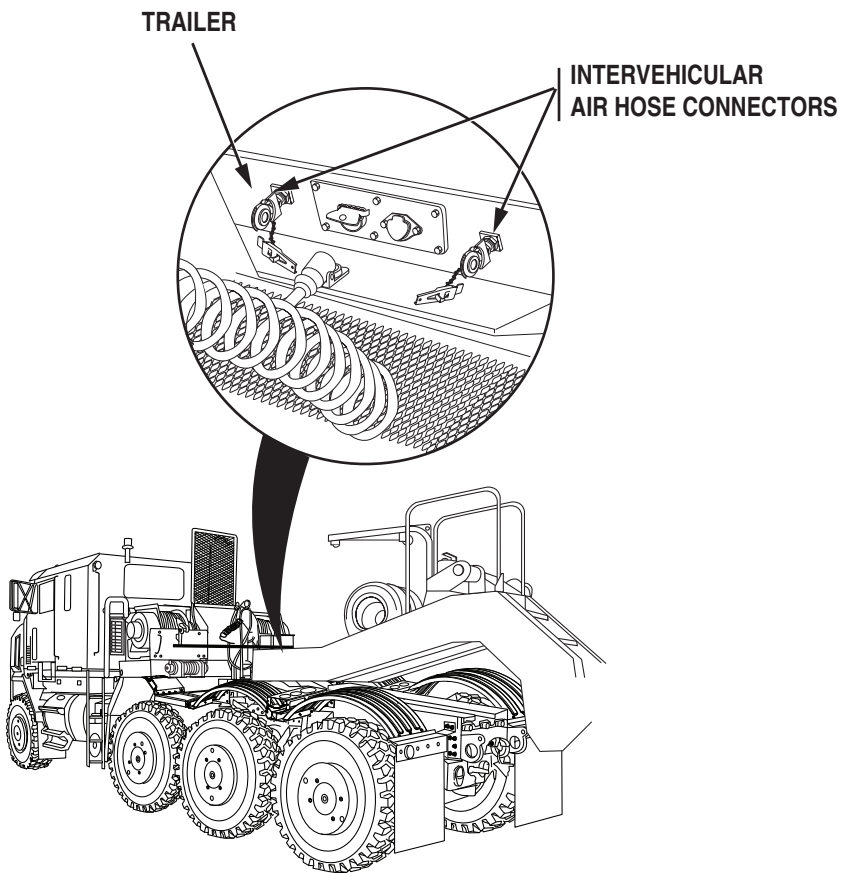
No damage found, but air is heard leaking at intervehicular air supply connection. - Step 2 - Are leaks still heard at the intervehicular air supply connection after repositioning the intervehicular air lines? Contact supervisor.

Damage is found at intervehicular air supply connection. - Contact supervisor.

### **STEP 2**

**Are leaks still heard at the intervehicular air supply connection after repositioning the intervehicular air lines?**

1. To remove pressure from trailer air connections, pull out trailer air supply control.
2. Disconnect intervehicular air lines (WP 0057) between HET Tractor and trailer.



*Figure 3. Intervehicular Air Hoses.*

3. Being careful to make a good connection, connect intervehicular air lines (WP 0057) between HET Tractor and trailer.
4. Push in trailer air supply control to apply pressure to trailer air connections.

#### **CONDITION/INDICATION**

Are leaks still heard at the intervehicular air supply connection after repositioning the intervehicular air lines?

#### **DECISION**

No - Problem corrected.  
Yes - Contact supervisor.

#### **END OF WORK PACKAGE**

**OPERATOR MAINTENANCE**  
**WINDSHIELD WASHER WILL NOT OPERATE**

**INITIAL SETUP:**

**Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

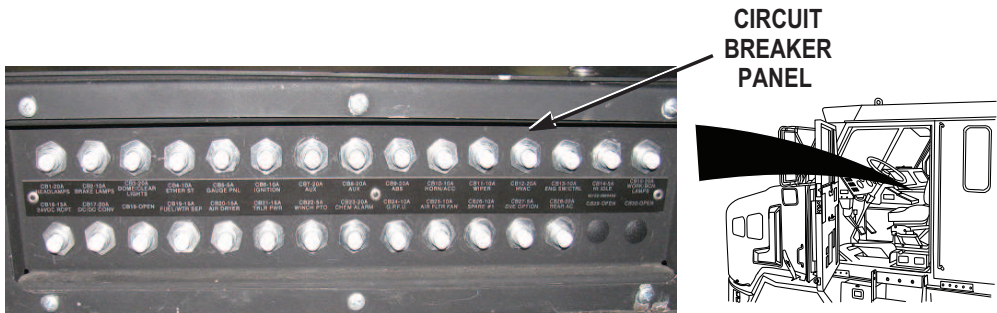
Parking brakes applied. (WP 0049)  
Wheels chocked. (WP 0036)

**TROUBLESHOOTING PROCEDURE**  
**WINDSHIELD WASHER WILL NOT OPERATE**

**STEP 1**

**Is windshield wiper circuit breaker tripped?**

1. Check if windshield wiper circuit breaker CB11 has been tripped.



*Figure 1. Circuit Breaker Panel.*

2. Reset windshield wiper circuit breaker if tripped.

**CONDITION/INDICATION**

Is windshield wiper circuit breaker tripped?

**DECISION**

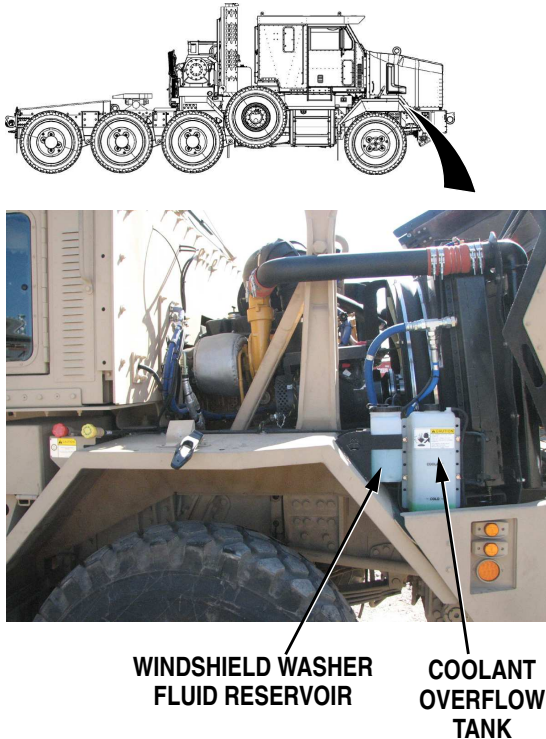
No - Step 2 - Is windshield washer reservoir fluid level low?  
Yes - Reset circuit breaker. (Step 5 - Does windshield washer operate properly?)

**STEP 2**

**Is windshield washer reservoir fluid level low?****CAUTION**

Do not fill windshield washer reservoir with water when temperatures are likely to be 32 degrees F (0 degrees C) or less. If water freezes, reservoir might crack or break.

Check windshield washer reservoir fluid level.



*Figure 2. Windshield Washer Reservoir.*

**CONDITION/INDICATION**

Is windshield washer reservoir fluid level low?

**DECISION**

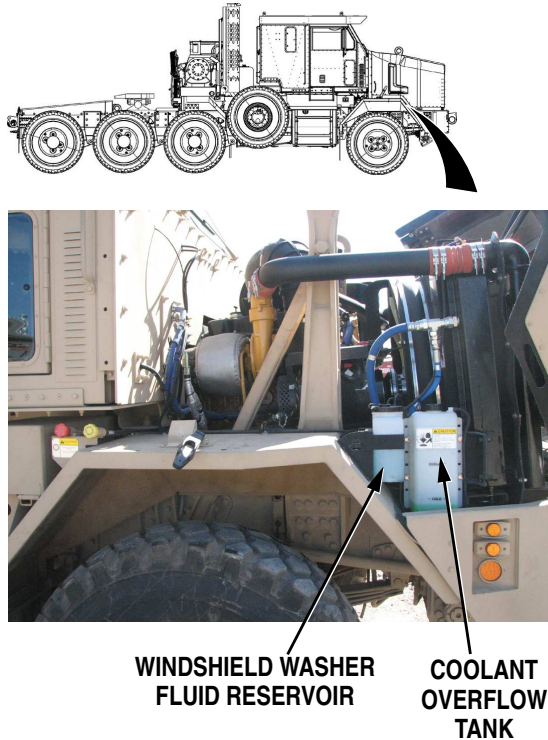
No - Step 3 - Are windshield washer reservoir, hoses, or hose connections damaged or leaking?

Yes - Replenish windshield washer fluid reservoir. (WP 0124) Step 5 - Does windshield washer operate properly?

**STEP 3**

**Are windshield washer reservoir, hoses, or hose connections damaged or leaking?**

Check windshield washer reservoir, hoses, and hose connections for leaks and damage.



*Figure 3. Windshield Washer Reservoir.*

**CONDITION/INDICATION**

Are windshield washer reservoir, hoses, or hose connections damaged or leaking?

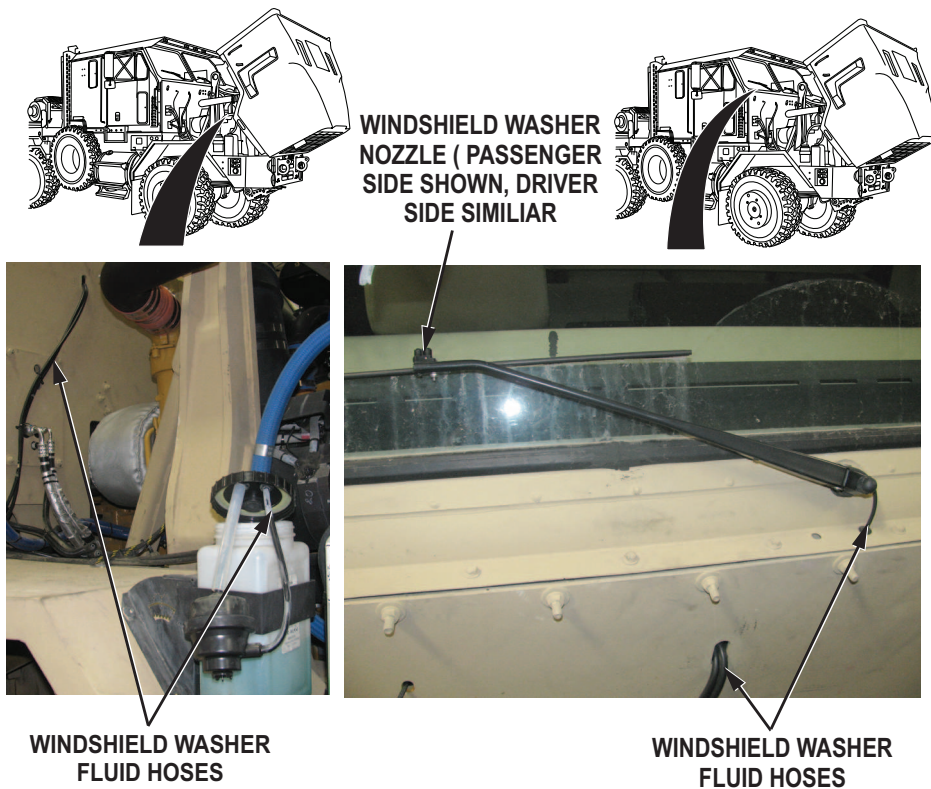
**DECISION**

No - Step 4 - Are any windshield washer spray openings restricted?

Yes - Notify supervisor. Washer parts require repair or replacement.

**STEP 4****Are any windshield washer spray openings restricted?**

Check windshield washer spray openings for restrictions.



*Figure 4. Windshield Washer Nozzles And Hoses.*

- a. If any windshield washer spray openings appear to be restricted, click on **Yes** button.
- b. If windshield washer spray openings are not restricted, click on **No** button.

#### CONDITION/INDICATION

Are any windshield washer spray openings restricted?

#### DECISION

No - Step 5 - Does windshield washer operate properly?  
 Yes - Notify Field Maintenance.

#### STEP 5

##### Does windshield washer operate properly?

1. Turn ignition switch to ON position.
2. Check if windshield washer (WP 0053) operates.
3. Turn ignition switch to OFF position.

**CONDITION/INDICATION**

Does windshield washer operate properly?

**DECISION**

No - Contact supervisor.

Yes - Problem corrected.

**END OF WORK PACKAGE**





## OPERATOR MAINTENANCE BUZZER SOUNDS AND AIR INDICATOR IS ILLUMINATED

### INITIAL SETUP:

#### Equipment Condition

Engine OFF. (WP 0050)

#### Equipment Condition (cont.)

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

### TROUBLESHOOTING PROCEDURE

#### BUZZER SOUNDS AND AIR INDICATOR IS ILLUMINATED

#### STEP 1

##### Is air pressure greater than 75 psi (517 kPa)?

1. Start engine (WP 0045), and allow air pressure to build.
2. Check air pressure.

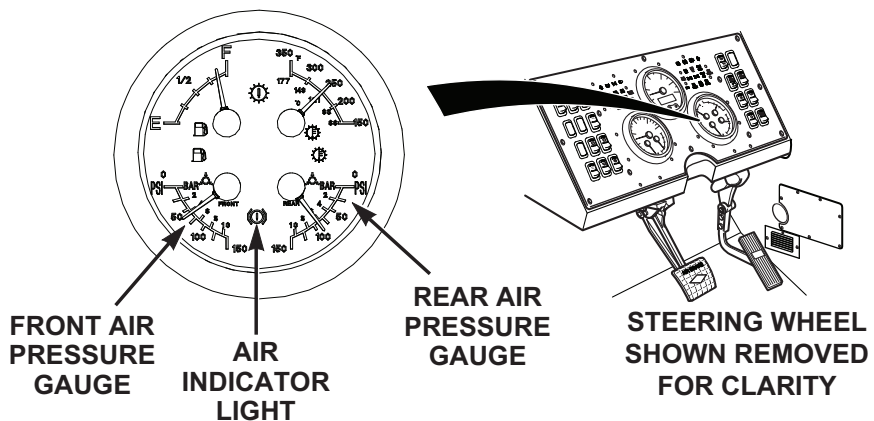


Figure 1. Front and Rear Air Pressure Gauges.

3. Shut OFF engine. (WP 0050)

#### CONDITION/INDICATION

Is air pressure greater than 75 psi (517 kPa)?

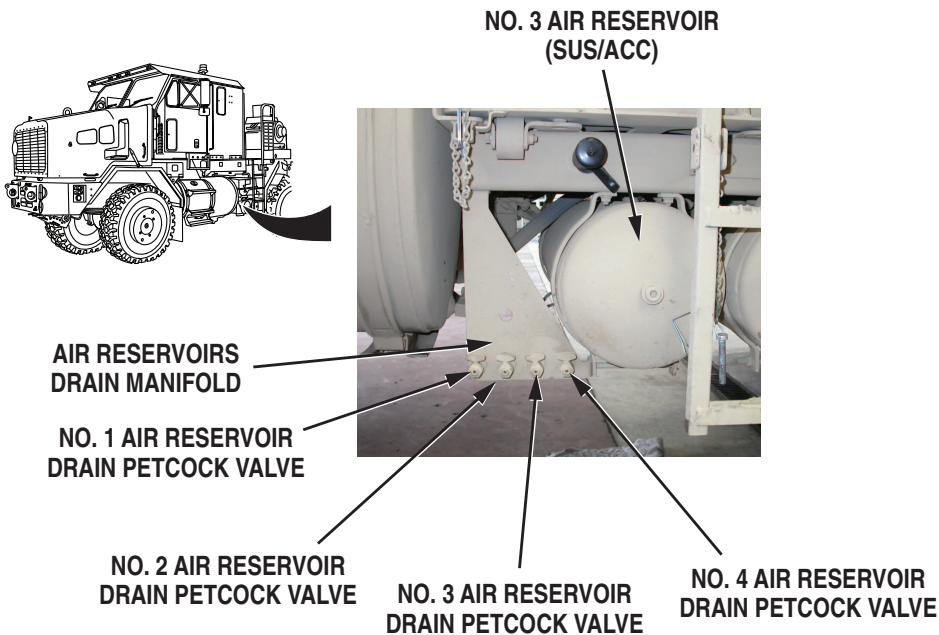
**DECISION**

No - Notify Field Maintenance.

Yes - Step 2 - Are any petcock valves open?

**STEP 2****Are any petcock valves open?**

Check if any air reservoir petcock valves are open. Close any open petcocks.



*Figure 2. Air Reservoirs Drain Manifold and Valves.*

**CONDITION/INDICATION**

Are any petcock valves open?

**DECISION**

Petcock(s) open - Step 6 - Does buzzer stop, and air indicator light extinguish?

Petcock(s) closed - Step 3 - Is trailer air supply control set to correct position?

**STEP 3****Is trailer air supply control set to correct position?**

1. Check that trailer air supply control is pulled out (OFF position) if a trailer is not coupled to the vehicle, or pushed in (ON position) if a trailer is coupled.
2. If trailer air supply control is set to the wrong position for vehicle configuration, set to correct position.

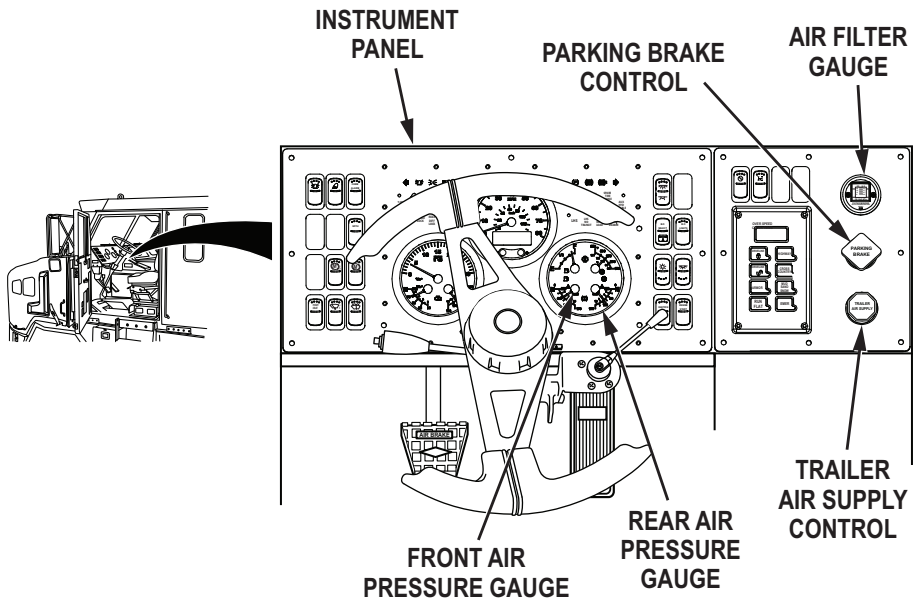


Figure 3. Instrument Panel Air Gauges and Controls.

#### CONDITION/INDICATION

Is trailer air supply control set to correct position?

#### DECISION

No - Step 4 - Does air reservoir, lines, or fittings leak?

Yes - Step 6 - Does buzzer stop, and air indicator light extinguish?

#### STEP 4

**Does air reservoir, lines, or fittings leak?**

1. Check air reservoir lines and fittings for leaks.

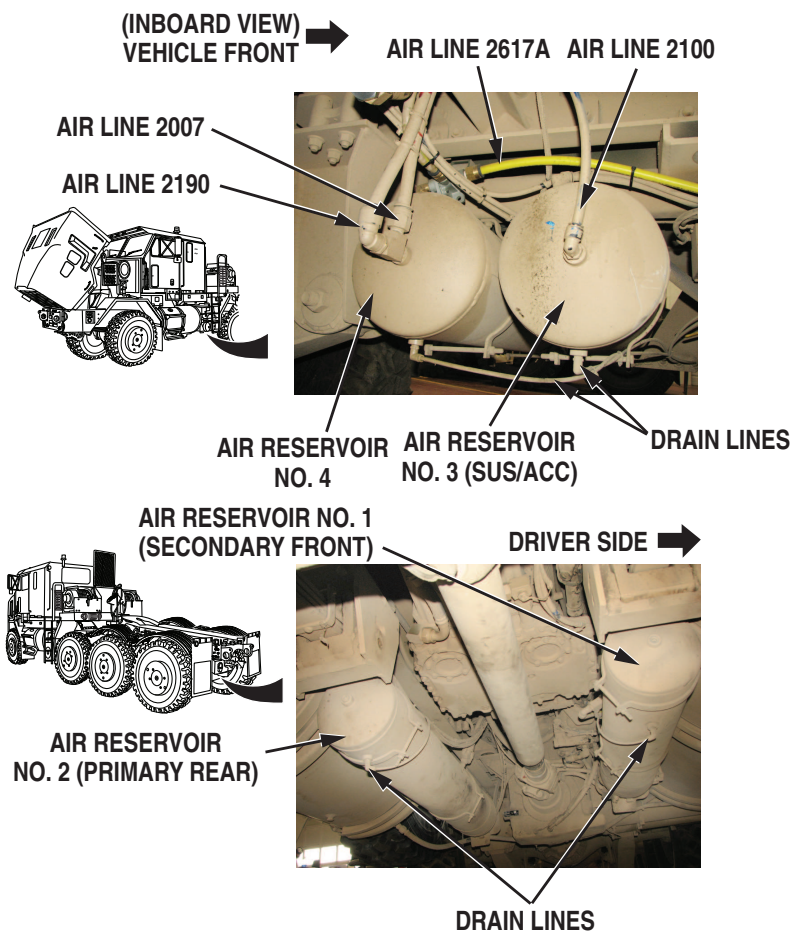
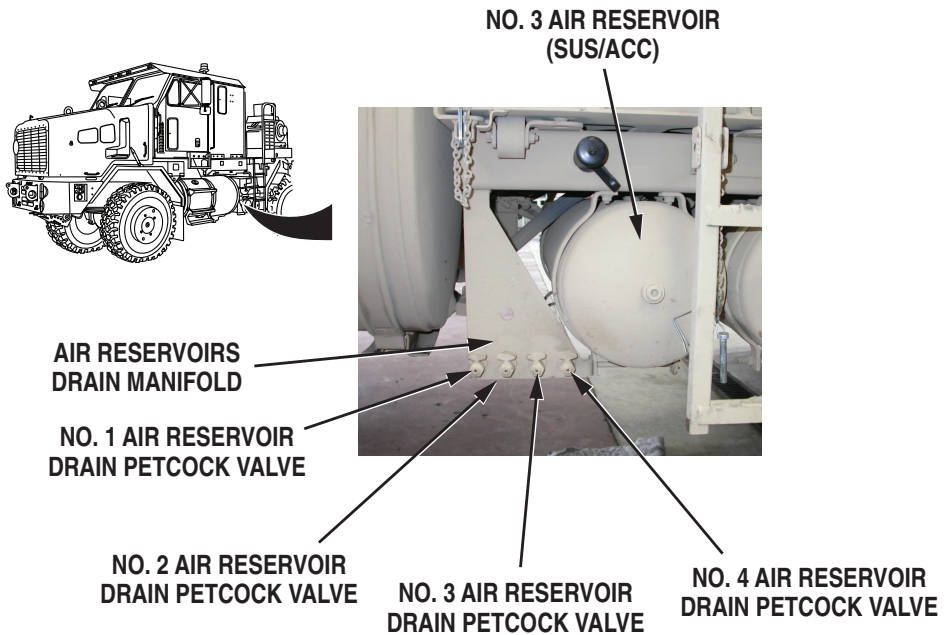


Figure 4. Air Reservoirs and Air Lines.

2. Check four air reservoirs and associated drain valves for leaks.



*Figure 5. Air Reservoir Drain Manifold and Valves.*

3. Check air lines and fittings between air dryers and air reservoirs for leaks. Tighten any leaky connections found.

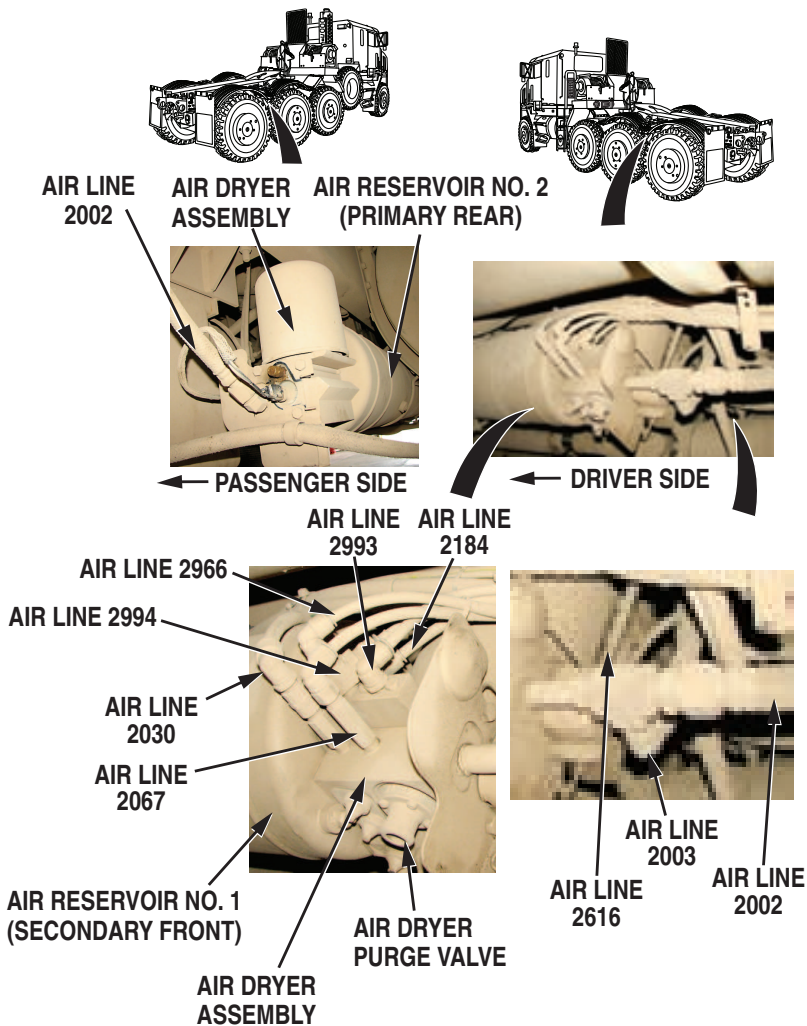


Figure 6. Air Dryers and Air Lines.

### CONDITION/INDICATION

Does air reservoir, lines, or fittings leak?

### DECISION

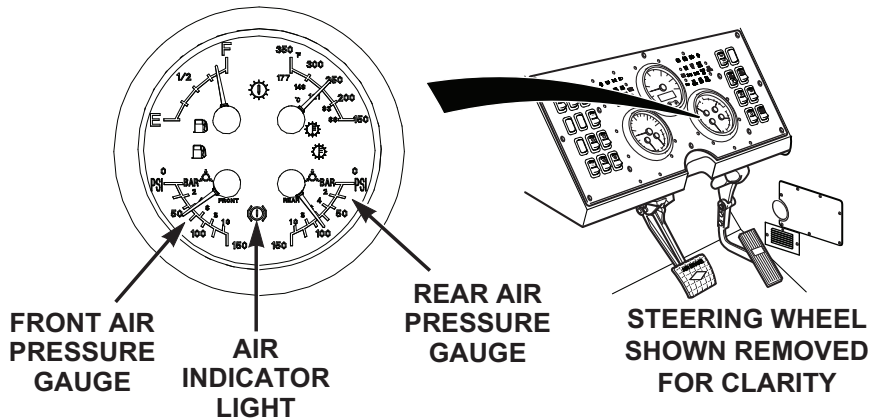
Air reservoir, and/or lines leak. - Notify Field Maintenance. Step 6 - Does buzzer stop, and air indicator light extinguish? Notify Field Maintenance.

Air reservoir, lines, and/or fittings free of leaks. - Step 5 - Does buzzer sound, and air indicator light illuminate when trailer is disconnected?

**STEP 5**

**Does buzzer sound, and air indicator light illuminate when trailer is disconnected?**

1. If trailer is coupled, disconnect trailer (WP 0057) from vehicle.
2. Start engine (WP 0045), and allow air pressure to build.
3. Check if buzzer continues to sound, and if air indicator light is illuminated.



*Figure 7. Front and Rear Air Pressure Gauges.*

4. Shut OFF engine. (WP 0050)

**CONDITION/INDICATION**

Does buzzer sound, and air indicator light illuminate when trailer is disconnected?

**DECISION**

- No - Problem corrected.
- Yes - Notify Field Maintenance.

**STEP 6**

**Does buzzer stop, and air indicator light extinguish?**

1. Start engine (WP 0045), and allow air pressure to build.
2. Check that buzzer does not sound, and air indicator light is off.

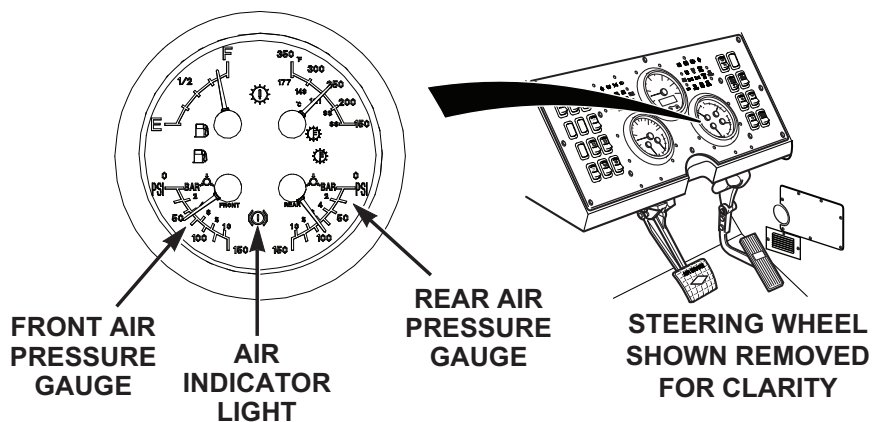


Figure 8. Front and Rear Air Pressure Gauges.

3. Shut OFF engine. (WP 0050)

#### CONDITION/INDICATION

Does buzzer stop, and air indicator light extinguish?

#### DECISION

No - Notify Field Maintenance.  
Yes - Problem corrected.

#### END OF WORK PACKAGE



**OPERATOR MAINTENANCE  
AIR HORN WILL NOT OPERATE**

---

**INITIAL SETUP:****Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brakes applied. (WP 0049)

Wheels chocked. (WP 0036)

---

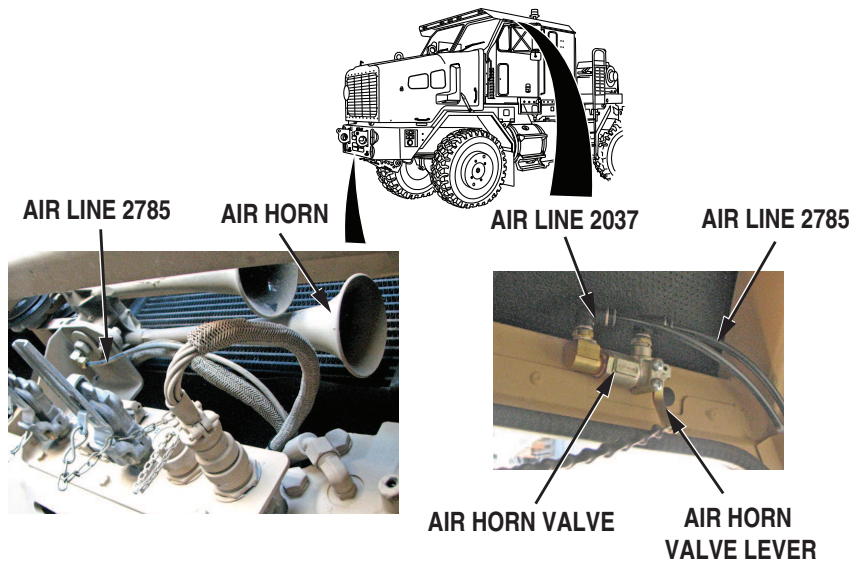
**TROUBLESHOOTING PROCEDURE  
AIR HORN WILL NOT OPERATE**

**STEP 1****Are air line connections securely fastened?**

**WARNING**

Wear proper eye protection when working with air under pressure. Failure to comply may result in serious injury or death to personnel.

Check air line connections for tightness. Tighten any loose connections.



*Figure 1. Air Horn Valve Lever and Air Lines.*

#### **CONDITION/INDICATION**

Are air line connections securely fastened?

#### **DECISION**

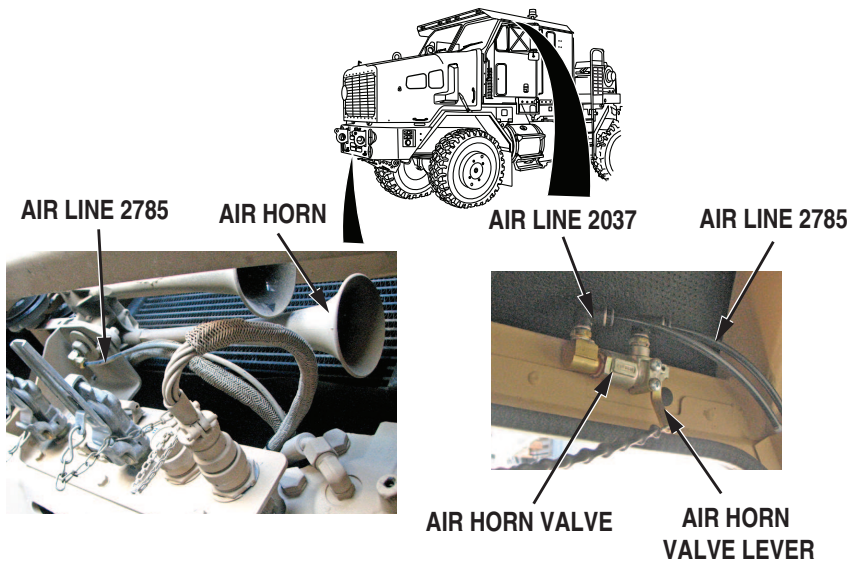
Connections loose - Contact supervisor.

Connections securely fastened - Step 2 - Does horn valve lever move freely?

#### **STEP 2**

##### **Does horn valve lever move freely?**

Check horn valve lever for freedom of movement.



*Figure 2. Air Horn Valve Lever and Air Lines.*

#### **CONDITION/INDICATION**

Does horn valve lever move freely?

#### **DECISION**

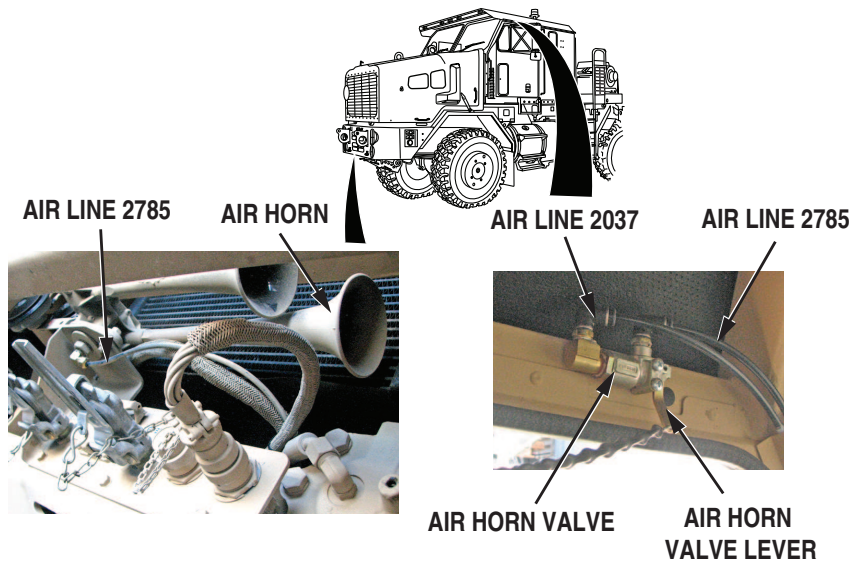
No - Contact supervisor.

Yes - Step 3 - Does air horn operate?

#### **STEP 3**

##### **Does air horn operate?**

1. Start engine (WP 0045), and allow air pressure to build.
2. Check air horn for proper operation.



*Figure 3. Air Horn Valve Lever and Air Lines.*

3. Shut OFF engine. (WP 0050)

**CONDITION/INDICATION**

Does air horn operate?

**DECISION**

No - Contact supervisor.  
Yes - Problem corrected.

**END OF WORK PACKAGE**

## OPERATOR MAINTENANCE CTIS WILL NOT OPERATE

### INITIAL SETUP:

#### Equipment Condition

Engine OFF. (WP 0050)

#### Equipment Condition (cont.)

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

### TROUBLESHOOTING PROCEDURE CTIS WILL NOT OPERATE

#### STEP 1

##### Is CTIS switch in ON position?

Check to see if CTIS disable switch is in OFF position.

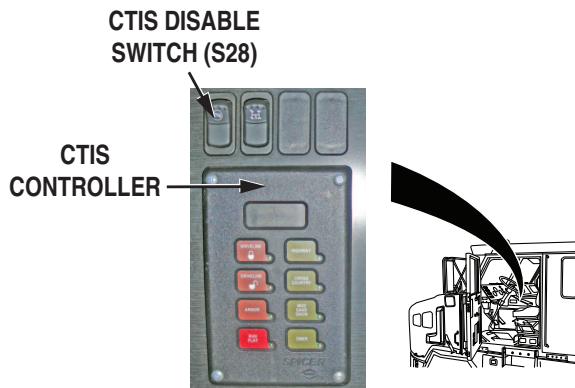


Figure 1. CTIS Disable Switch.

#### CONDITION/INDICATION

Is CTIS switch in ON position?

#### DECISION

No - Turn CTIS switch to ON position. (WP 0052) Step 5 - Does CTIS operate properly?

Yes - Step 2 - Does CTIS run properly after resetting controller?

**STEP 2**

**Does CTIS run properly after resetting controller?**

**NOTE**

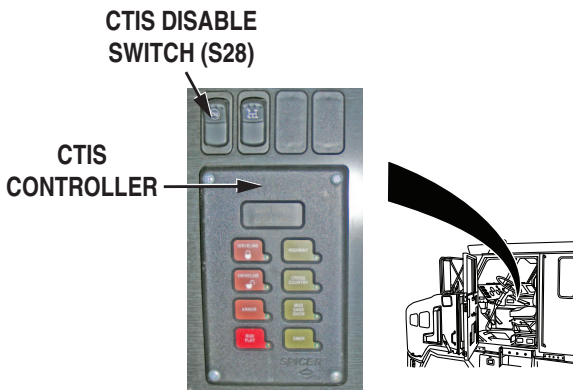
Turning CTIS OFF, and then ON, resets controller.

1. Push CTIS enable switch up to OFF position.

**NOTE**

CTIS will not operate if air system pressure is less than 85 psi (5.9 bar).

2. Turn ON CTIS enable switch



*Figure 2. CTIS Enable Switch.*

3. Check CTIS operation. (WP 0052)

**CONDITION/INDICATION**

Does CTIS run properly after resetting controller?

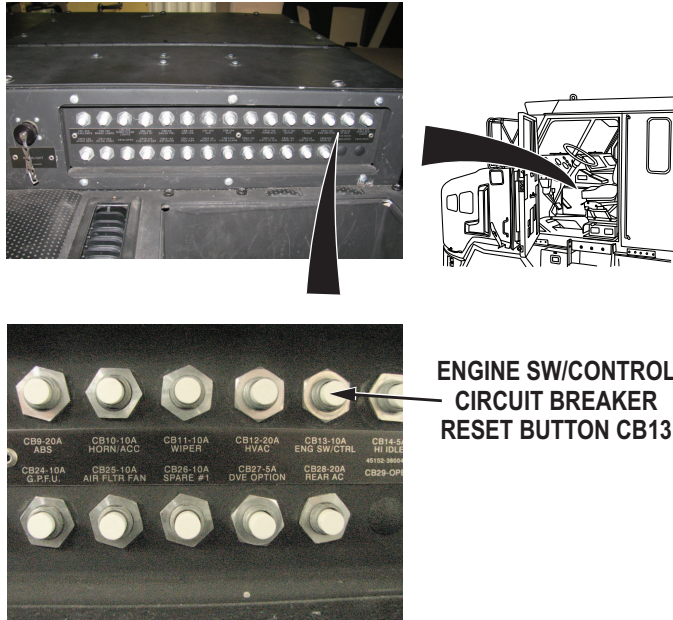
**DECISION**

No - Step 3 - Is CTIS circuit breaker tripped?

Yes - Problem corrected.

**STEP 3****Is CTIS circuit breaker tripped?**

1. Check if CTIS circuit breaker has been tripped.



*Figure 3. Engine SW/Control Circuit Breaker.*

2. Reset circuit breaker if tripped.

**CONDITION/INDICATION**

Is CTIS circuit breaker tripped?

**DECISION**

No - Step 4 - Does low air (CTIS) indicator extinguish after air system reaches operating pressure?

Yes - Step 5 - Does CTIS operate properly?

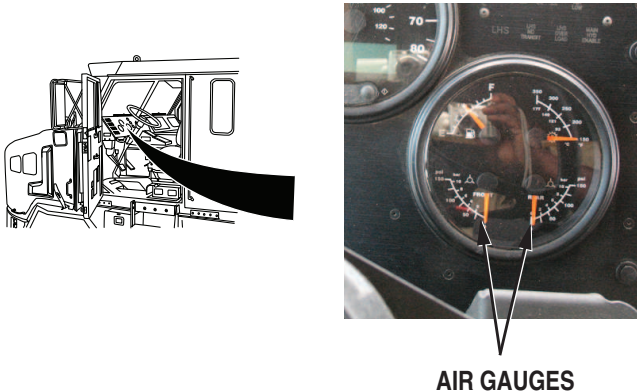
**STEP 4**

**Does low air (CTIS) indicator extinguish after air system reaches operating pressure?**

**NOTE**

CTIS will operate if air system pressure is greater than 85 psi (5.9 bar). However, the low air (CTIS) indicator will not extinguish unless air system pressure is at least 110 psi (7.6 bar).

1. Start engine. (WP 0045)
2. Observe air pressure gauge to see if air pressure builds to at least 110 psi (7.6 bar).



*Figure 4. Air Gauges.*

3. Check if low air (CTIS) indicator light turns off.

**CONDITION/INDICATION**

Does low air (CTIS) indicator extinguish after air system reaches operating pressure?

**DECISION**

No - Indicator light circuit is faulty. Contact supervisor.  
Yes - Step 5 - Does CTIS operate properly?



**STEP 5****Does CTIS operate properly?****NOTE**

CTIS will not operate if air system pressure is less than 85 psi (5.9 bar).

1. Start engine. (WP 0045)
2. Check CTIS operation. (WP 0052)

**CONDITION/INDICATION**

Does CTIS operate properly?

**DECISION**

No - Contact supervisor.  
Yes - Problem corrected.

**END OF WORK PACKAGE**



## OPERATOR MAINTENANCE ONE OR MORE ELECTRICAL CIRCUITS NOT OPERATING

### INITIAL SETUP:

#### Equipment Condition

Engine OFF. (WP 0050)

#### Equipment Condition (cont.)

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

### TROUBLESHOOTING PROCEDURE

#### ONE OR MORE ELECTRICAL CIRCUITS NOT OPERATING

#### STEP 1

Are any circuit breakers tripped?

#### NOTE

Breakers open automatically to protect HET Tractor from electrical overloads. Push in circuit breaker buttons to reset.

Check to see if any circuit breakers are tripped. If tripped, attempt to reset circuit breaker(s) (WP 0018).



Figure 1. Circuit Breaker Panel.

#### CONDITION/INDICATION

Are any circuit breakers tripped?

**DECISION**

No - Step 2 - Is blackout lighting switch set to ON position?

Yes - Contact Field Maintenance.

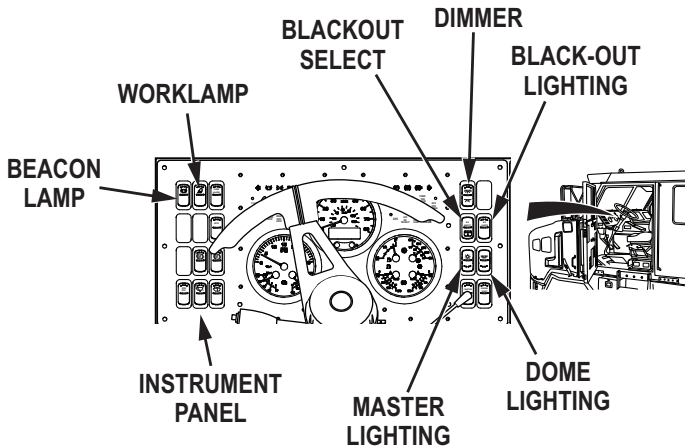
**STEP 2**

**Is blackout lighting switch set to ON position?**

**NOTE**

Three-position switch turns headlights and clearance/marker lights on/off. B.O. (blackout) lights switch must be set to OFF position before headlights will operate. Center position operates clearance/marker lights and parking lights. Fully up position adds headlights. Fully down position turns headlights, clearance/marker lights, and parking lights off.

Check if blackout lighting switch is set to ON position. If so, set switch to OFF position.



*Figure 2. Instrument Panel Lighting Switches.*

**CONDITION/INDICATION**

Is blackout lighting switch set to ON position?

**DECISION**

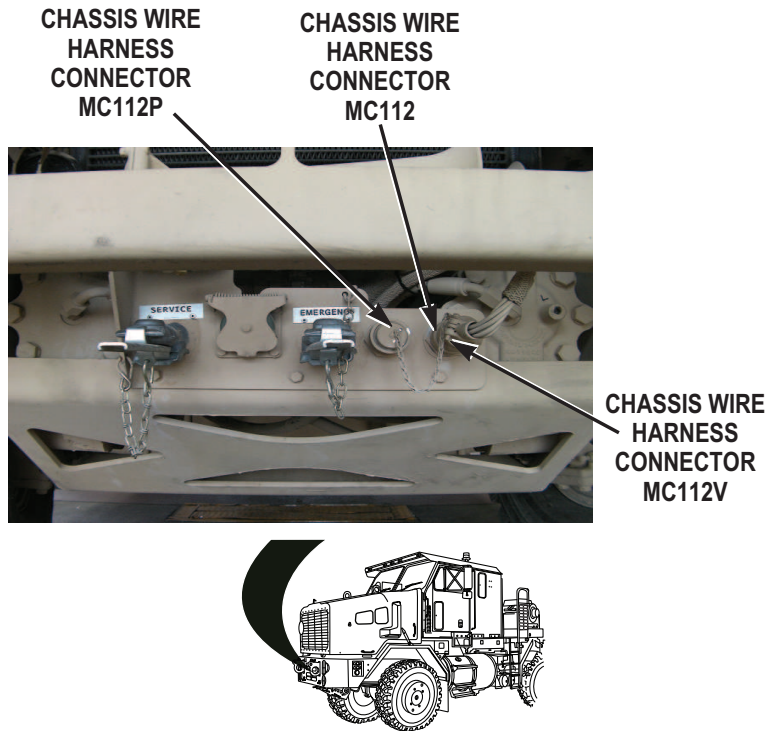
No - Step 3 - Is chassis wire harness connector MC112V disconnected or connected to chassis wire harness connector MC112P?

Yes - Step 4 - Do all lighting circuits operate properly?

**STEP 3**

**Is chassis wire harness connector MC112V disconnected or connected to chassis wire harness connector MC112P?**

Check that chassis wire harness connector MC112V is properly connected to chassis wire harness connector MC112. Refer to



*Figure 3. Chassis Wire Harness Connectors MC112, MC112V and MC112P.*

**CONDITION/INDICATION**

Is chassis wire harness connector MC112V disconnected or connected to chassis wire harness connector MC112P?

**DECISION**

Chassis wire harness connector MC112V connection faulty. - Step 4 - Do all lighting circuits operate properly?

Chassis wire harness connector MC112V connection OK. - Contact supervisor.

**STEP 4****Do all lighting circuits operate properly?**

1. Check for proper operation of dome lights. (WP 0038)
2. Check for proper operation of panel lights. (WP 0038)
3. Check for proper operation of service drive lights. (WP 0043)
4. Check for proper operation of parking lights. (WP 0043)
5. Check for proper operation of clearance lights. (WP 0043)
6. Have assistant press service brake pedal while checking for proper operation of brake lights.
7. Check for proper operation of worklights. (WP 0039)
8. Check for proper operation of beacon lights. (WP 0039)
9. Check for proper operation of blackout drive lights. (WP 0044)
10. Check for proper operation of blackout marker lights. (WP 0044)
11. Check for proper operation of turn signal lights. (WP 0041)

**CONDITION/INDICATION**

Do all lighting circuits operate properly?

**DECISION**

No - Contact supervisor.  
Yes - Problem corrected.

**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE**  
**FAILS TO CRANK WHEN ENGINE START SWITCH IS TURNED TO START POSITION**

---

**INITIAL SETUP:**

**Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brakes applied. (WP 0049)

Wheels chocked. (WP 0036)

---

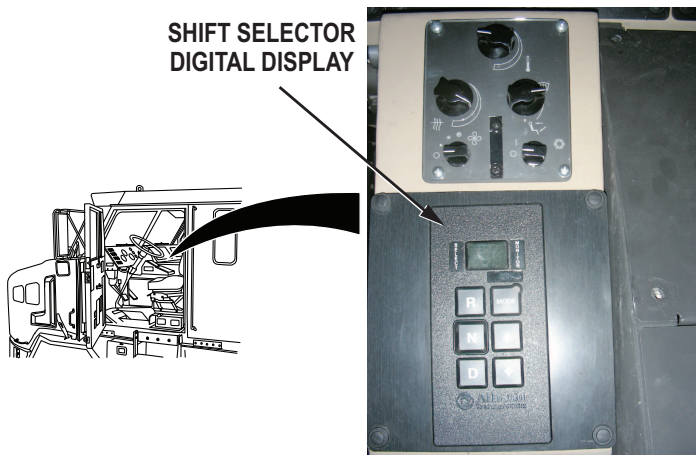
**TROUBLESHOOTING PROCEDURE**

**FAILS TO CRANK WHEN ENGINE START SWITCH IS TURNED TO START POSITION**

**STEP 1**

**Is transmission range selector in neutral (N) position?**

Verify that transmission range selector is in neutral (N) position. If not, shift to neutral (N).



*Figure 1. Transmission Range Selector.*

**CONDITION/INDICATION**

Is transmission range selector in neutral (N) position?

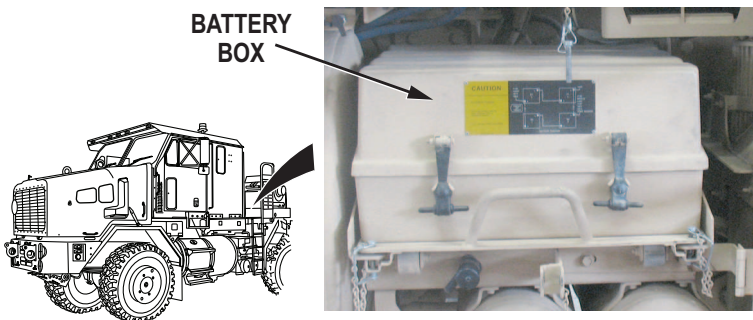
**DECISION**

No - Step 3 - Does engine crank when ignition switch is turned to start position?

Yes - Step 2 - Are battery cable connections clean, tight, and free of damage?

**STEP 2****Are battery cable connections clean, tight, and free of damage?**

1. Open battery box cover.
2. Check battery cable connections for dirt, corrosion and looseness.



*Figure 2. Battery Box.*

3. Check battery cables for damage.

**CONDITION/INDICATION**

Are battery cable connections clean, tight, and free of damage?

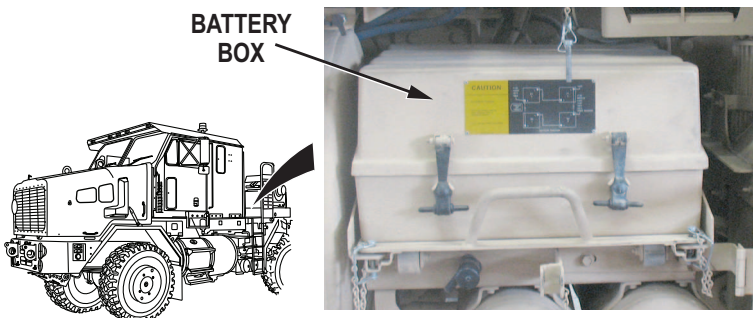
**DECISION**

No - Contact supervisor.

Yes - Step 3 - Does engine crank when ignition switch is turned to start position?

**STEP 3****Does engine crank when ignition switch is turned to start position?**

1. If open, close battery box cover.



*Figure 3. Battery Box.*

2. Attempt to start engine. (WP 0045)



**CONDITION/INDICATION**

Does engine crank when ignition switch is turned to start position?

**DECISION**

No - Contact supervisor.

Yes - Problem corrected.

**END OF WORK PACKAGE**



## OPERATOR MAINTENANCE CRANKS BUT FAILS TO START

### INITIAL SETUP:

#### Equipment Condition

Engine OFF. (WP 0050)

#### Equipment Condition (cont.)

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

### TROUBLESHOOTING PROCEDURE CRANKS BUT FAILS TO START

#### STEP 1

#### Does fuel gauge indicate presence of fuel?

1. Turn ignition switch to ON position.
2. Check fuel gauge for indication of fuel presence.

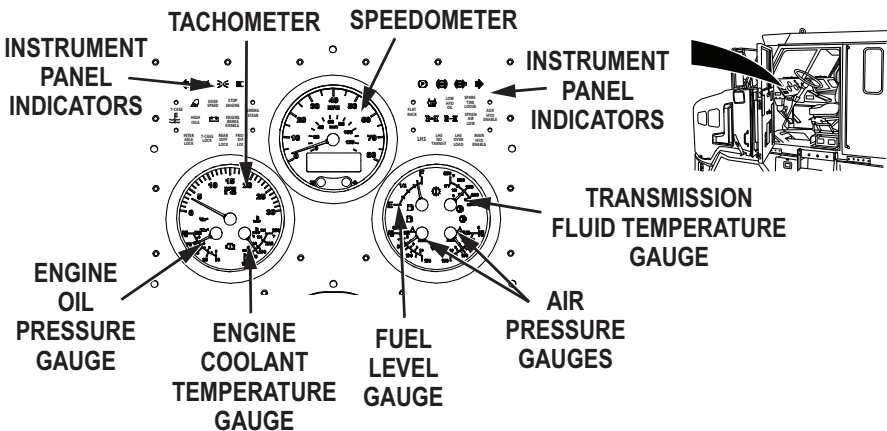


Figure 1. Fuel Level Gauge.

3. Turn ignition switch to OFF position.

#### CONDITION/INDICATION

Does fuel gauge indicate presence of fuel?

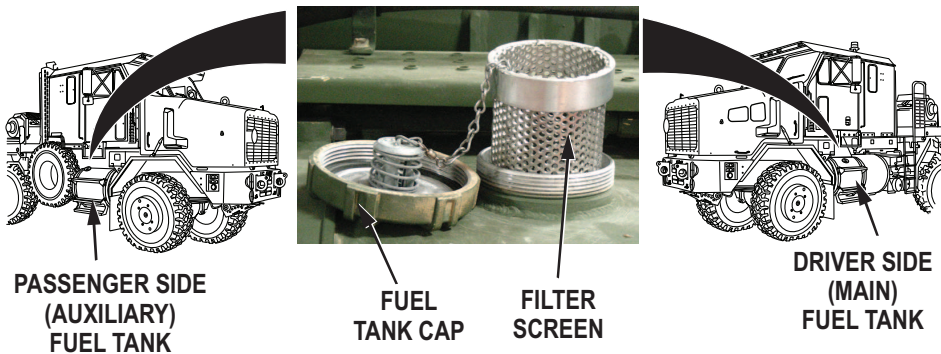
**DECISION**

No - Step 2 - Is fuel present in fuel tank?

Yes - Contact field maintenance.

**STEP 2****Is fuel present in fuel tank?**

1. Remove fuel tank cap and filter screen from fuel tank.



*Figure 2. Fuel Tank Cap and Filter Screen.*

2. Visually inspect fuel tank for presence of fuel.
3. If empty, fill fuel tank. (WP 0124)
4. Clean filter screen (WP 0121), and reinstall screen and fuel tank cap.

**CONDITION/INDICATION**

Is fuel present in fuel tank?

**DECISION**

No - Fill fuel tank. (WP 0134) Step 4 - Does engine start?

Yes - Step 3 - Is air filter restricted?

**STEP 3****Is air filter restricted?****NOTE**

The air filter restriction gauge will show red and/or VACUUM INCHES/  
kPa H<sub>2</sub>O window shows 22 or more when unrestricted.

Attempt to start engine (WP 0045), and note indication on air filter restriction gauge.

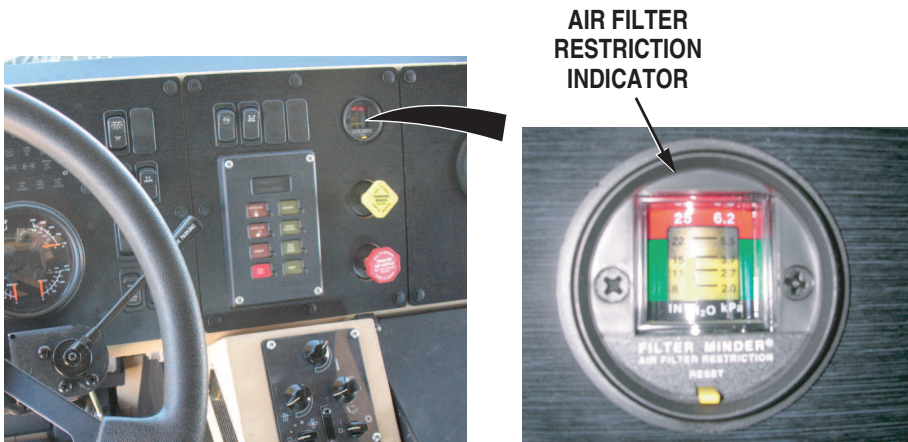


Figure 3. Air Filter Restriction Gauge.

#### CONDITION/INDICATION

Is air filter restricted?

#### DECISION

No - Service air filter. (WP 0135) Step 4 - Does engine start?

Yes - Contact field maintenance.

#### STEP 4

##### Does engine start?

1. Attempt to start engine. (WP 0045)
2. If running, shut OFF engine. (WP 0050)

#### CONDITION/INDICATION

Does engine start?

#### DECISION

No - Contact field maintenance.

Yes - Problem corrected.

#### END OF WORK PACKAGE



**OPERATOR MAINTENANCE**  
**STARTS OR RUNS ROUGH AFTER PROPER WARM-UP, DOES NOT DEVELOP FULL**  
**POWER, OR MAKES EXCESSIVE EXHAUST SMOKE**

**INITIAL SETUP:**

**Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

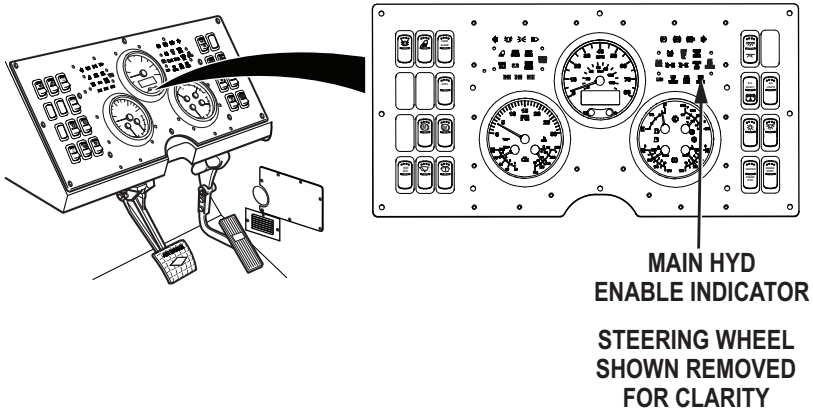
**TROUBLESHOOTING PROCEDURE**

**STARTS OR RUNS ROUGH AFTER PROPER WARM-UP, DOES NOT DEVELOP FULL**  
**POWER, OR MAKES EXCESSIVE EXHAUST SMOKE**

**STEP 1**

**Is PTO engaged?**

1. Start engine (WP 0045), and run until normal operating temperature is reached.
2. Check Main HYD Enable indicator to ensure that PTO is disengaged. Light should be off.



*Figure 1. Main Hydraulic Enable Indicator.*

**CONDITION/INDICATION**

Is PTO engaged?

**DECISION**

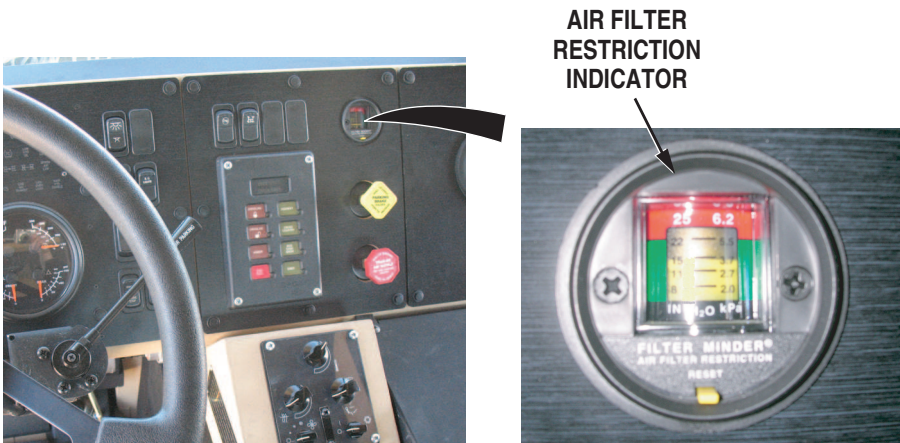
PTO engaged. - Step 4 - Does engine start or run roughly after proper warm-up, and/or does not make full power or produces excessive exhaust smoke?

PTO disengaged. - Step 2 - Does air filter restriction gauge show red and/or VACUUM INCHES H<sub>2</sub>O window show 18 or more after being reset?

**STEP 2**

**Does air filter restriction gauge show red and/or VACUUM INCHES H<sub>2</sub>O window show 18 or more after being reset?**

1. Reset air filter restriction gauge.
2. Start engine. (WP 0045)
3. Check if air filter restriction gauge is red and/or VACUUM INCHES H<sub>2</sub>O window shows 18 or more.



*Figure 2. Air Filter Restriction Gauge.*

**CONDITION/INDICATION**

Does air filter restriction gauge show red and/or VACUUM INCHES H<sub>2</sub>O window show 18 or more after being reset?

**DECISION**

Restricted. - Step 3 - Does air filter restriction indicator show red and/or VACUUM INCHES H<sub>2</sub>O window show 22 or more after being cleaned?

Not restricted. - Step 4 - Does engine start or run roughly after proper warm-up, and/or does not make full power or produces excessive exhaust smoke?

**STEP 3**

**Does air filter restriction indicator show red and/or VACUUM INCHES H<sub>2</sub>O window show 22 or more after being cleaned?**

1. Shut OFF engine. (WP 0050)
2. Clean air filter.



3. Start engine. (WP 0045)
4. Check if air filter restriction gauge is red and/or VACUUM INCHES H2O window shows 22 or more.

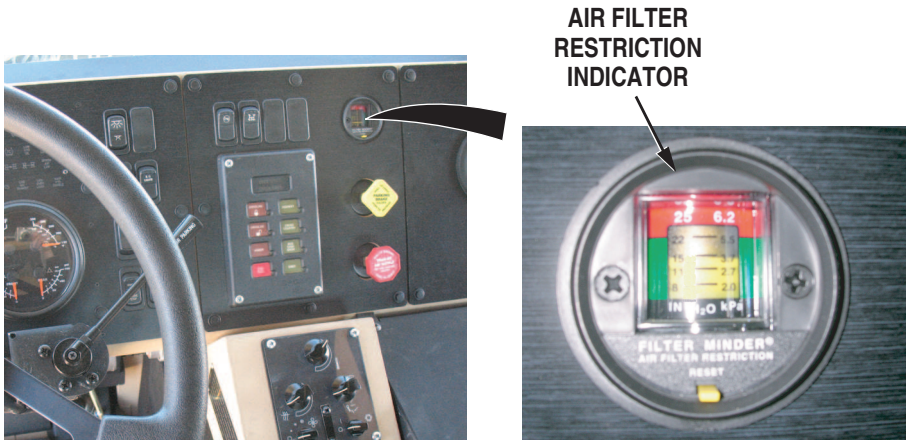


Figure 3. Air Filter Restriction Gauge.

#### CONDITION/INDICATION

Does air filter restriction indicator show red and/or VACUUM INCHES H2O window show 22 or more after being cleaned?

#### DECISION

Restricted. - Contact supervisor.

Not restricted. - Step 4 - Does engine start or run roughly after proper warm-up, and/or does not make full power or produces excessive exhaust smoke?

#### STEP 4

**Does engine start or run roughly after proper warm-up, and/or does not make full power or produces excessive exhaust smoke?**

1. Bookmark this page and return upon completion of road test.
2. Perform road test on vehicle.

#### CONDITION/INDICATION

Does engine start or run roughly after proper warm-up, and/or does not make full power or produces excessive exhaust smoke?

#### DECISION

Runs rough. - contact supervisor.

Runs normal. - Problem corrected.

#### END OF WORK PACKAGE



---

## OPERATOR MAINTENANCE ENGINE OVERHEATS

---

### INITIAL SETUP:

#### Equipment Condition

Engine OFF. (WP 0050)

#### Equipment Condition (cont.)

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

---

### TROUBLESHOOTING PROCEDURE ENGINE OVERHEATS

#### STEP 1

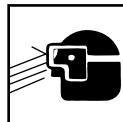
Is engine coolant at proper level?

#### WARNING



- Use extreme care when removing radiator pressure cap. Sudden release of pressure can cause steam flash. Slowly loosen cap to the first stop to relieve pressure prior to removing cap completely. Failure to comply may result in serious injury or death to personnel.
- Use clean, thick waste cloth or like material to remove radiator pressure cap. Avoid using gloves. If hot water soaks through gloves, personnel could be burned. Failure to comply may result in serious injury or death to personnel.

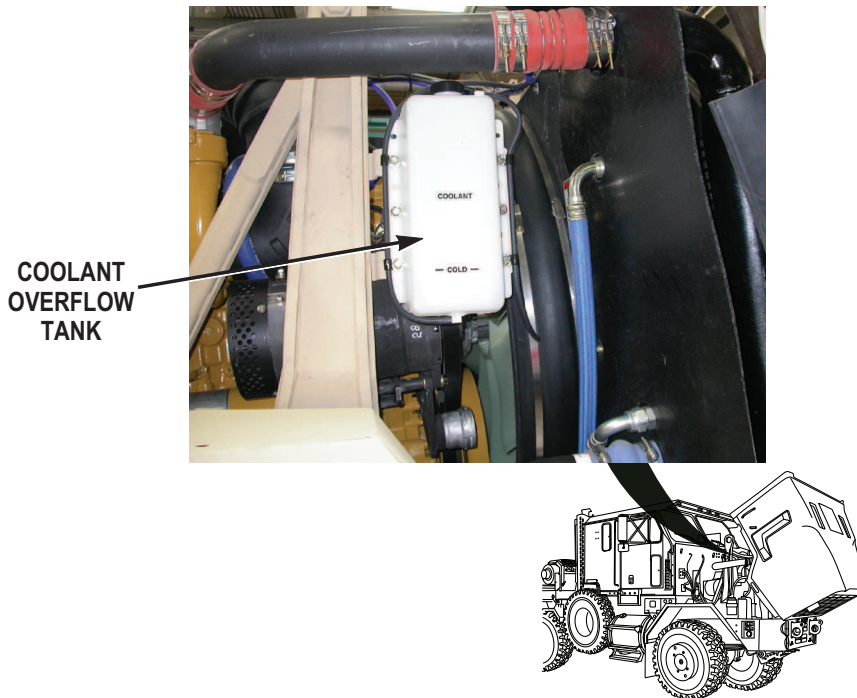
#### WARNING



Fuel, oil, and antifreeze are slippery and can cause falls. To avoid injury, wipe up spilled fuel or oil with a clean cloth and wear proper eye

protection. Failure to comply may result in serious injury or death to personnel.

1. Turn battery disconnect switch to OFF position.
2. Open hood. (WP 0129)
3. Inspect coolant level. (WP 0118)



*Figure 1. Coolant Overflow Tank*

- a. If coolant level is OK, click on **Yes** button.
- b. If coolant level is low, click on **No** button.

#### **CONDITION/INDICATION**

Is engine coolant at proper level?

#### **DECISION**

No - Fill engine coolant reservoir to proper operating level. Step 3 - Does engine overheat?

Yes - Step 2 - Are upper and lower radiator hoses and housing free of leaks?

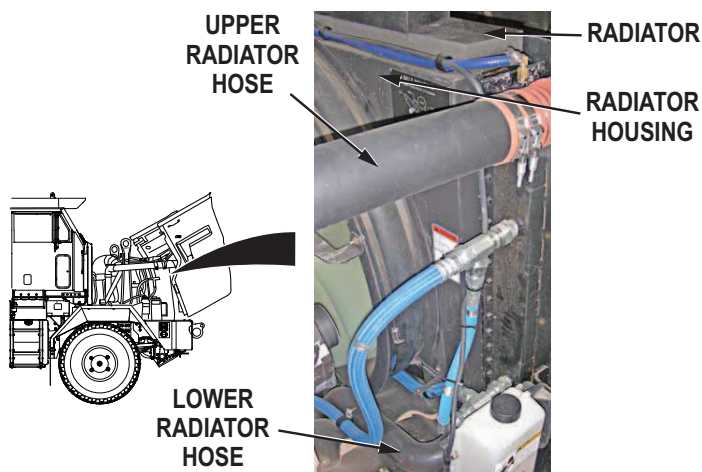
**STEP 2**

**Are upper and lower radiator hoses and housing free of leaks?**

**WARNING**

Radiator coolant hoses are very hot and pressurized during vehicle operation. Allow radiator to cool prior to checking hoses. Failure to comply may result in serious injury or death to personnel.

1. Open hood. (WP 0129)
2. Check upper and lower radiator hoses and housing for leaks.



*Figure 2. Upper and Lower Radiator Hoses.*

3. Check that all clamps are tight and secure.

**CONDITION/INDICATION**

Are upper and lower radiator hoses and housing free of leaks?

**DECISION**

Radiator hoses and/or housing damaged. - Contact supervisor. Contact supervisor.  
Radiator hoses and housing are free of damage and leaks. - Step 3 - Does engine overheat?

**STEP 3****Does engine overheat?****NOTE**

Bookmark this page and return upon completion of vehicle road test.

1. Close hood. (WP 0129)
2. Start engine. (WP 0045)
3. Perform road test on vehicle.

**CONDITION/INDICATION**

Does engine overheat?

**DECISION**

Engine overheats - Contact supervisor.  
Engine does not overheat - Problem Corrected.

**END OF WORK PACKAGE**

---

## OPERATOR MAINTENANCE LOW OIL PRESSURE GAUGE INDICATION

---

### INITIAL SETUP:

#### Equipment Condition

Engine OFF. (WP 0050)

#### Equipment Condition (cont.)

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

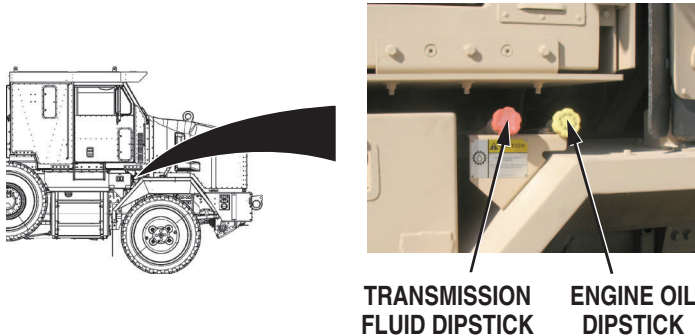
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### TROUBLESHOOTING PROCEDURE LOW OIL PRESSURE GAUGE INDICATION

#### STEP 1

##### Is engine oil level low?

1. Check engine oil level.



*Figure 1. Check Engine Oil Level.*

2. If engine oil level (WP 0124) is low, fill to proper level.

#### CONDITION/INDICATION

Is engine oil level low?

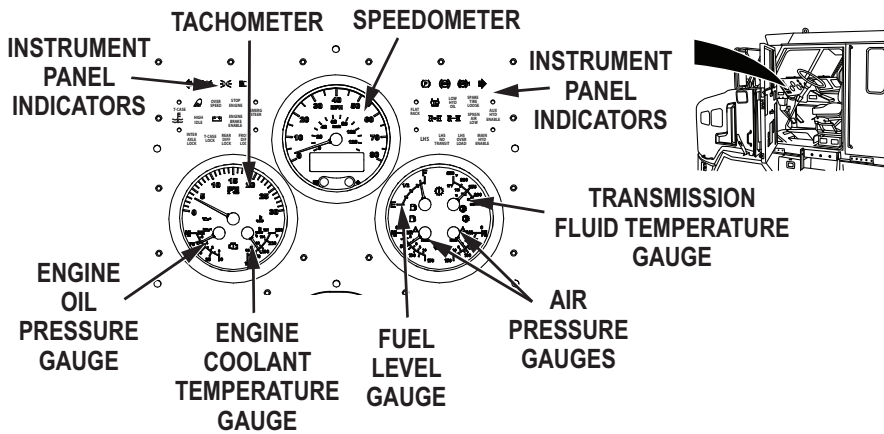
#### DECISION

-

Continue - Step 2 - Is engine oil pressure still low?

**STEP 2****Is engine oil pressure still low?**

1. Start engine (WP 0045), and run until proper operating temperature is reached.
2. Check OIL PRESS gauge. Gauge should read as follows:
  - Normal engine oil pressure operation range is 40 to 60 psi (2.8 to 4.1 bar) between engine speeds of 1800 to 2100 rpm.
  - Minimum oil pressure for safe operation is 30 psi (2 bar) between engine speeds of 1800 to 2100 rpm.



*Figure 2. Engine Oil Pressure Gauge.*

**CONDITION/INDICATION**

Is engine oil pressure still low?

**DECISION**

Oil pressure low - Contact supervisor.

Oil pressure within operating range - Problem Corrected.

**END OF WORK PACKAGE**



---

## OPERATOR MAINTENANCE EXCESSIVE ENGINE OIL CONSUMPTION

---

### INITIAL SETUP:

#### Equipment Condition

Engine OFF. (WP 0050)

#### Equipment Condition (cont.)

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

---

### TROUBLESHOOTING PROCEDURE EXCESSIVE ENGINE OIL CONSUMPTION

#### STEP 1

Are engine oil lines loose or damaged?

#### WARNING



Engine components become hot during normal operation. Allow engine to cool completely prior to performing this task. Be careful not to touch these parts with bare hands, or allow body to contact engine parts. Use gloves as necessary. Failure to comply may result in serious injury or death to personnel.

1. Open hood. (WP 0129)
2. Inspect engine oil lines and component fittings for looseness and damage.

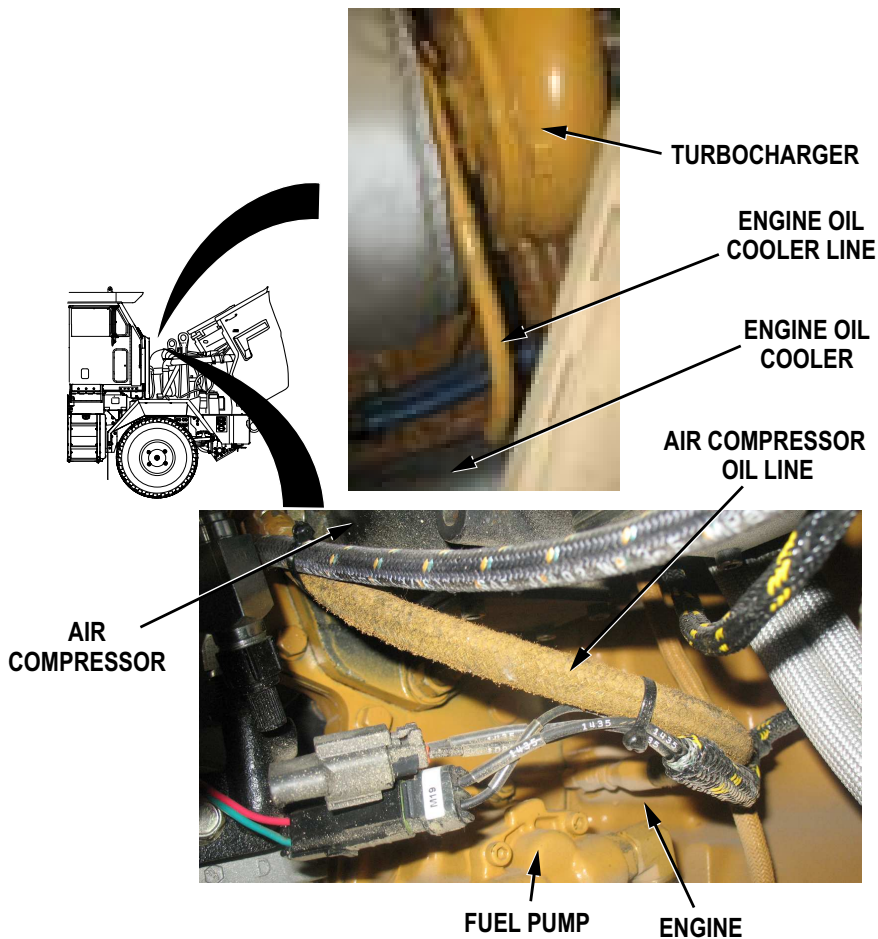


Figure 1. Engine Oil Lines.

3. Tighten and wipe clean any loose oil lines and component fittings.

#### CONDITION/INDICATION

Are engine oil lines loose or damaged?

#### DECISION

Lines damaged and/or loose - Contact supervisor.

Lines not damaged or loose - Step 2 - Are engine oil leaks present?

#### STEP 2

##### Are engine oil leaks present?

1. Turn battery disconnect switch to ON position.

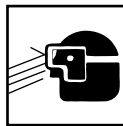
2. Turn ignition switch to ON position.
3. Start engine (WP 0045) and run for a few minutes to circulate pressurized oil through oil lines and components.
4. Shut off engine. (WP 0050)
5. Turn battery disconnect switch to OFF position.

### WARNING



Engine components become hot during normal operation. Allow engine to cool completely prior to performing this task. Be careful not to touch these parts with bare hands, or allow body to contact engine parts. Use gloves as necessary. Failure to comply may result in serious injury or death to personnel.

### WARNING



Ensure engine is OFF and eye protection is worn when checking for leaks. Failure to comply may result in serious injury or death to personnel.

6. Check engine oil lines and components for evidence of fresh oil leaks.

### CONDITION/INDICATION

Are engine oil leaks present?

### DECISION

Leaks found. - Contact supervisor.

No leaks found. - Problem Corrected.

### END OF WORK PACKAGE



## OPERATOR MAINTENANCE STOP ENGINE LIGHT ILLUMINATES

### INITIAL SETUP:

#### Equipment Condition

Engine OFF. (WP 0050)

#### Equipment Condition (cont.)

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

### TROUBLESHOOTING PROCEDURE STOP ENGINE LIGHT ILLUMINATES

#### STEP 1

#### Is stop engine light operating normally?

1. Turn battery disconnect switch to ON position.
2. Turn ignition switch to ON position and observe stop engine light.

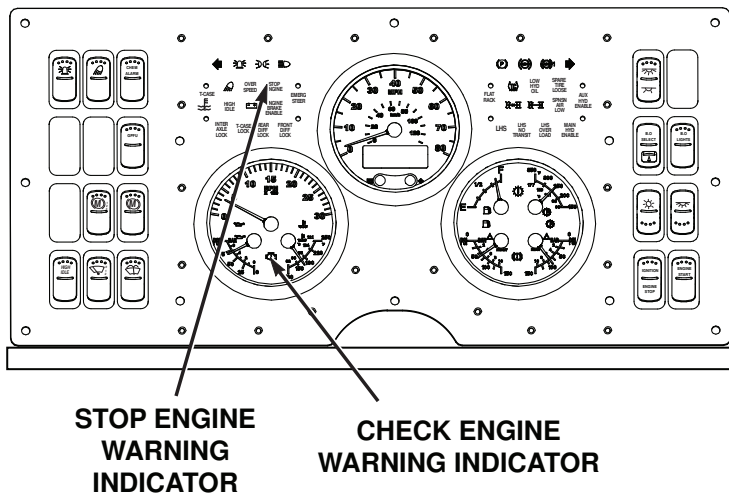


Figure 1. Stop Engine Light.

### NOTE

When the ignition switch is initially turned to the ON position, stop engine light should illuminate for five seconds. If an active diagnostic code is present, the light will continue to flash.

3. Start engine (WP 0045) and allow it to run for approximately one minute.
4. Quickly depress and release accelerator pedal.
5. Observe if **stop engine light** goes off or remains illuminated.
6. Shut off engine. (WP 0050)
  - a. If stop engine light goes off, click on **Stop engine light goes out** button.
  - b. If stop engine light remains illuminated, click on **Stop engine light remains illuminated** button.

### CONDITION/INDICATION

Is stop engine light operating normally?

### DECISION

Stop engine light remains illuminated - Contact Field Maintenance.

Stop engine light goes out - Step 2 - Is stop engine light still illuminated?

### STEP 2

#### Is stop engine light still illuminated?

1. Start engine (WP 0045) and allow it to run for approximately one minute.
2. Turn ignition switch to ON position and observe stop engine light.

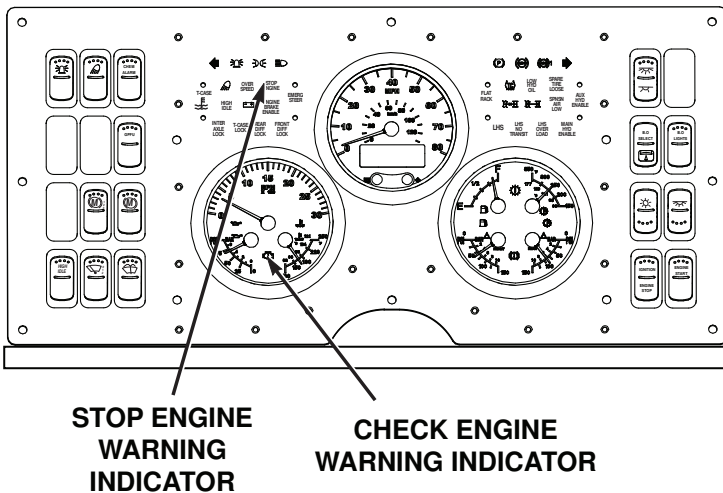


Figure 2. Stop Engine Light.

3. Observe if **stop engine light** goes off or remains illuminated.
4. Turn ignition switch to OFF position.
  - a. If stop engine light goes off, click on **Engine light goes out** button.
  - b. If stop engine light remains illuminated, click on **Engine light remains illuminated** button.

**CONDITION/INDICATION**

Is stop engine light still illuminated?

**DECISION**

Engine light remains illuminated - Contact Field Maintenance.

Engine light goes out - Problem Corrected.

**END OF WORK PACKAGE**





---

**OPERATOR MAINTENANCE**  
**EXHAUST SYSTEM UNUSUALLY NOISY OR EXHAUST FUMES IN CAB**

---

**INITIAL SETUP:**

**Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brakes applied. (WP 0049)

Wheels chocked. (WP 0036)

---

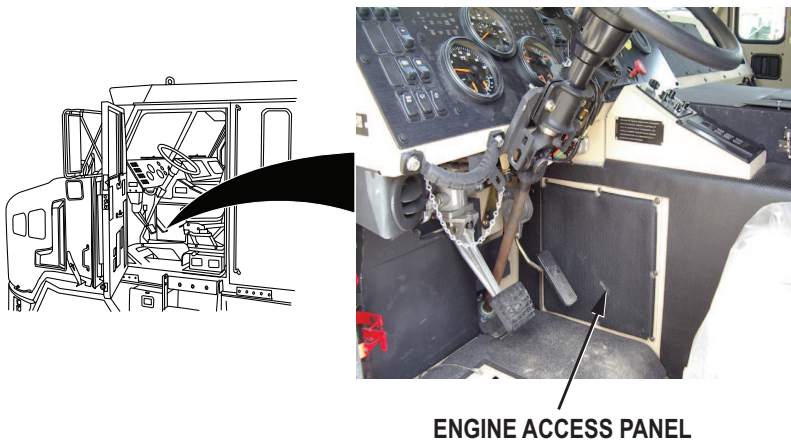
**TROUBLESHOOTING PROCEDURE**

**EXHAUST SYSTEM UNUSUALLY NOISY OR EXHAUST FUMES IN CAB**

**STEP 1**

**Is engine access panel in place and securely fastened?**

1. Check that engine access panel is in place and securely fastened.
2. If necessary, tighten loose engine access panel located on driver side center console near accelerator pedal.



*Figure 1. Engine Access Panel.*

**CONDITION/INDICATION**

Is engine access panel in place and securely fastened?

**DECISION**

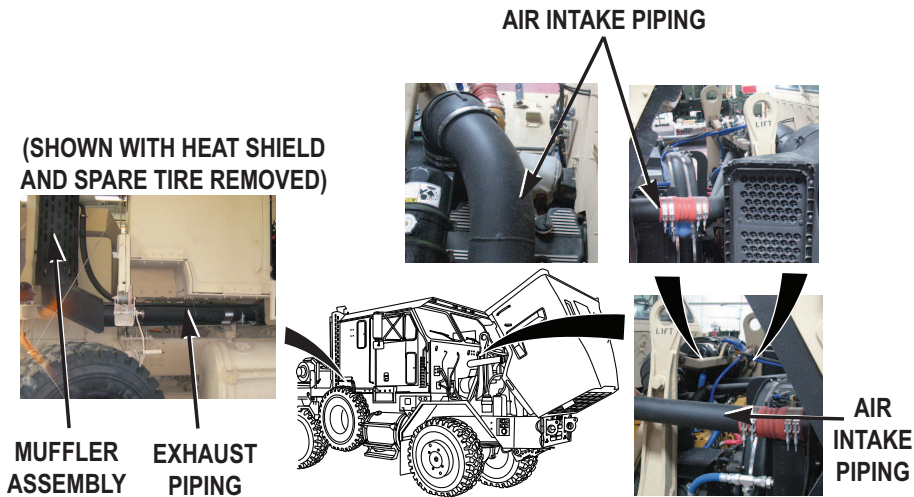
No - Contact supervisor.

Yes - Step 2 - Does exhaust pipe, muffler, or tailpipe have holes or loose connections?

**STEP 2**

**Does exhaust pipe, muffler, or tailpipe have holes or loose connections?**

1. Check exhaust pipe, muffler, and tailpipe for holes or loose connections.
2. Tighten any loose connections.



*Figure 2. Exhaust System Components.*

**CONDITION/INDICATION**

Does exhaust pipe, muffler, or tailpipe have holes or loose connections?

**DECISION**

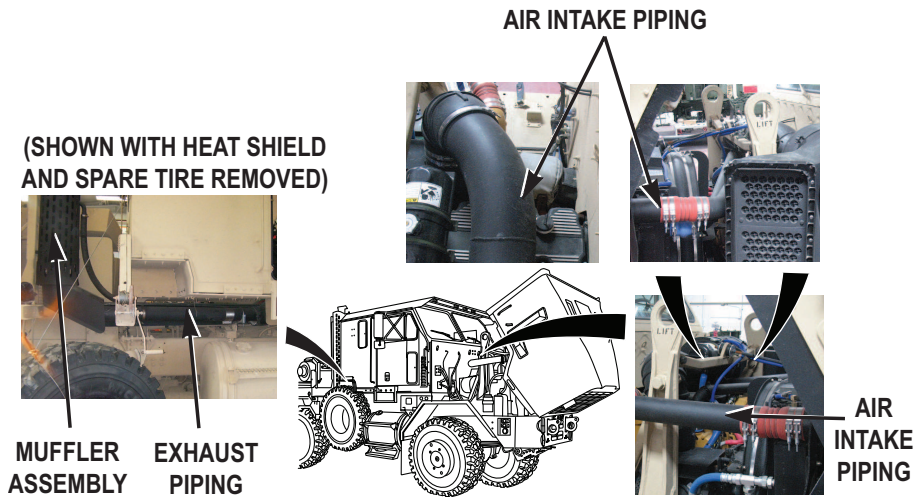
No - Step 3 - Is exhaust system noisy or leaking?

Yes - Contact Field Maintenance.

**STEP 3**

**Is exhaust system noisy or leaking?**

1. Start engine. (WP 0045)
2. Check for noisy exhaust system and fumes in cab.



*Figure 3. Exhaust System Components.*

3. Shut off engine. (WP 0050)

**CONDITION/INDICATION**

Is exhaust system noisy or leaking?

**DECISION**

No - Contact Field Maintenance.  
Yes - Problem corrected.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE**  
**FIFTH WHEEL WILL NOT LOCK WHEN COUPLING TRAILER TO HET TRACTOR**

---

**INITIAL SETUP:**

**Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

---

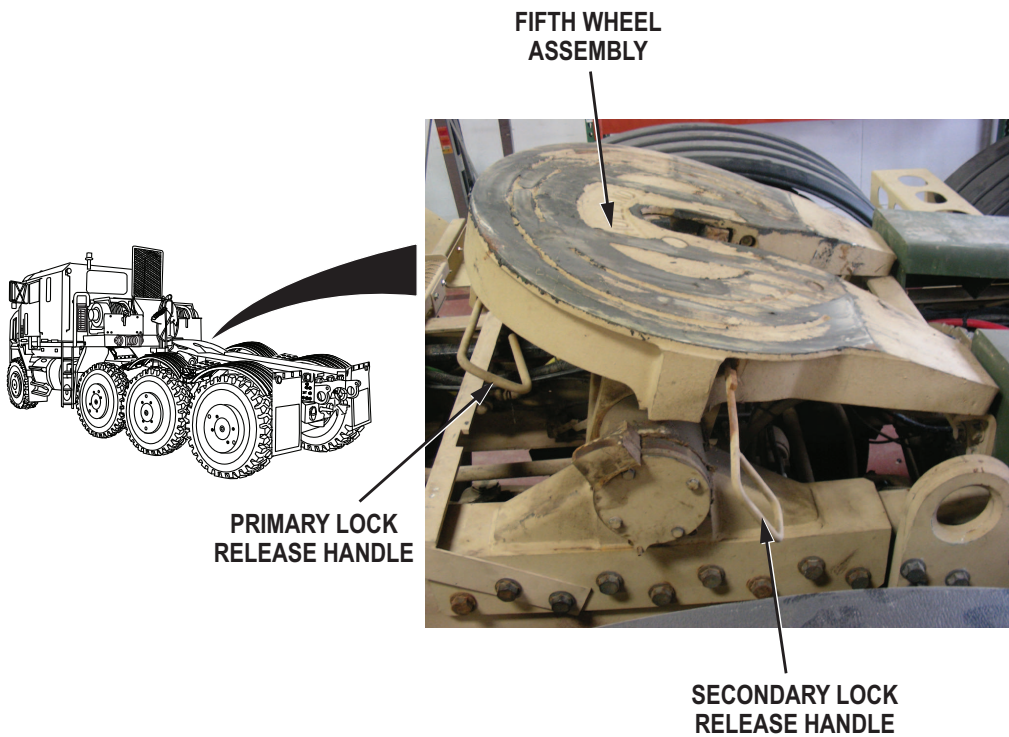
**TROUBLESHOOTING PROCEDURE**

**FIFTH WHEEL WILL NOT LOCK WHEN COUPLING TRAILER TO HET TRACTOR**

**STEP 1**

**Has dirt, ice, snow, or other debris built-up on fifth wheel?**

1. Check if dirt, ice, snow, or other debris has built up on fifth wheel.



*Figure 1. Fifth Wheel Coupling Components.*

2. Clean fifth wheel to remove any built up debris.

#### **CONDITION/INDICATION**

Has dirt, ice, snow, or other debris built-up on fifth wheel?

#### **DECISION**

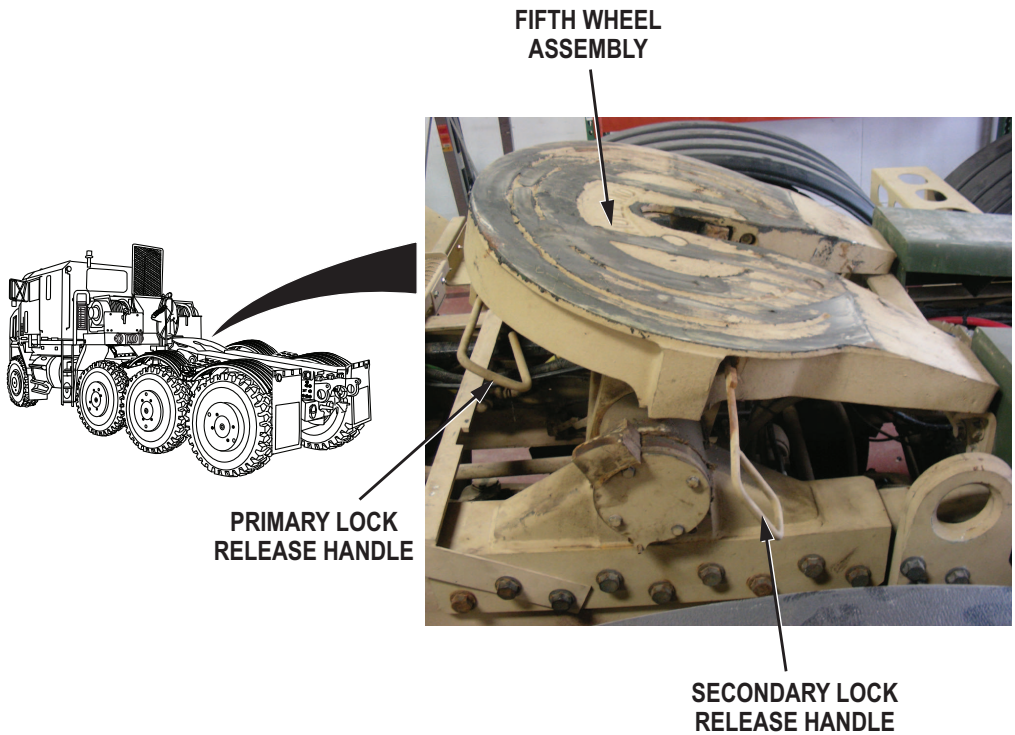
No - Step 2 - Is fifth wheel secondary lock release handle in locked position?

Yes - Step 4 - Does fifth wheel lock?

#### **STEP 2**

##### **Is fifth wheel secondary lock release handle in locked position?**

Check that fifth wheel secondary lock release handle (WP 0022) is in locked position.



*Figure 2. Fifth Wheel Coupling Components.*

### **CONDITION/INDICATION**

Is fifth wheel secondary lock release handle in locked position?

### **DECISION**

No - Place fifth wheel secondary lock release handle in locked position. (WP 0022)Step

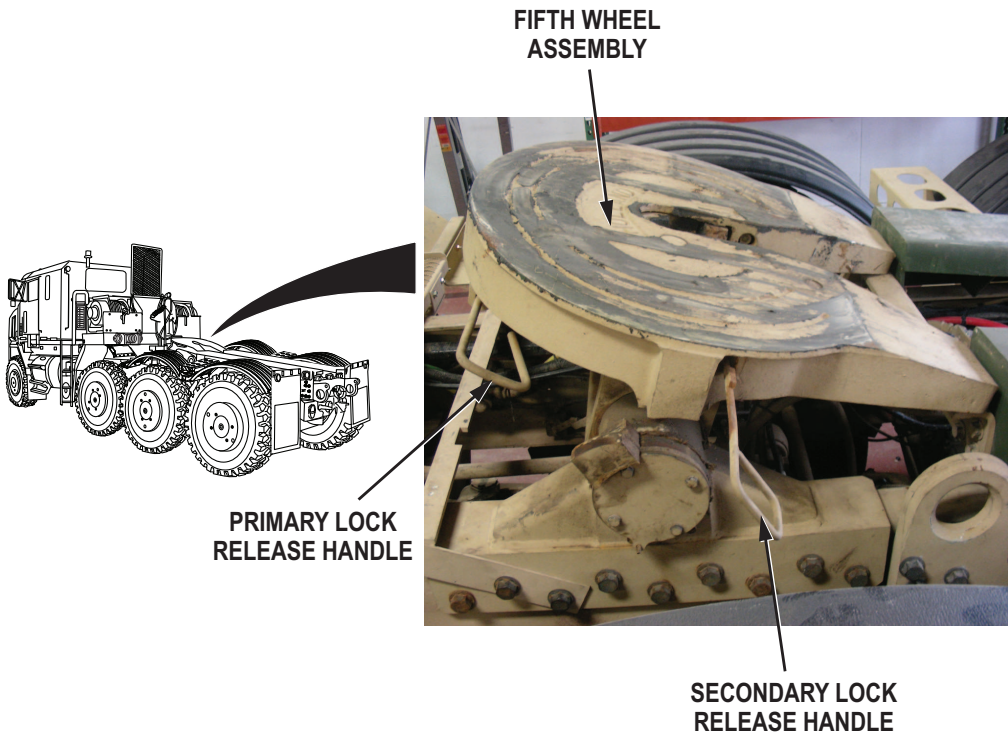
4 - Does fifth wheel lock?

Yes - Step 3 - Is fifth wheel primary lock release handle in locked position?

### **STEP 3**

**Is fifth wheel primary lock release handle in locked position?**

Check if fifth wheel primary lock release handle is in locked position.



*Figure 3. Fifth Wheel Coupling Components.*

#### **CONDITION/INDICATION**

Is fifth wheel primary lock release handle in locked position?

#### **DECISION**

No - Place fifth wheel primary lock release handle in locked position. (WP 0022) Step

4 - Does fifth wheel lock?

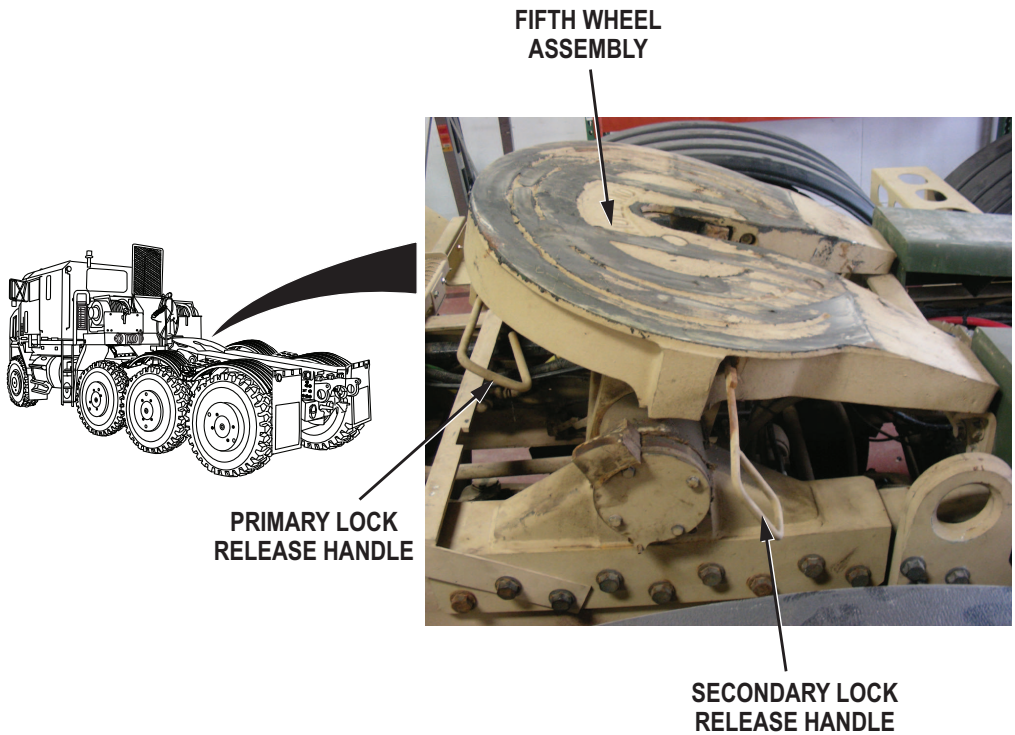
Yes - Step 4 - Does fifth wheel lock?

#### **STEP 4**

##### **Does fifth wheel lock?**

Attempt to couple trailer (WP 0057) to HET tractor.





*Figure 4. Fifth Wheel Coupling Components.*

**CONDITION/INDICATION**

Does fifth wheel lock?

**DECISION**

No - Contact Field Maintenance.

Yes - Problem corrected.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE**  
**EXCESSIVE MOVEMENT OF TRAILER KING PIN IN FIFTH WHEEL**

---

**INITIAL SETUP:**

**Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

---

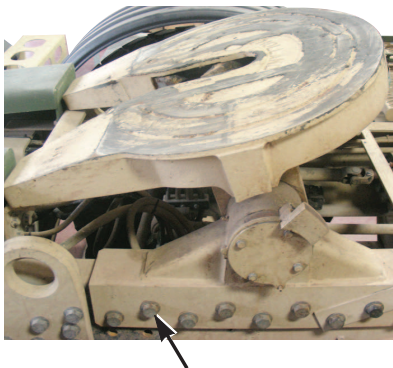
**TROUBLESHOOTING PROCEDURE**

**EXCESSIVE MOVEMENT OF TRAILER KING PIN IN FIFTH WHEEL**

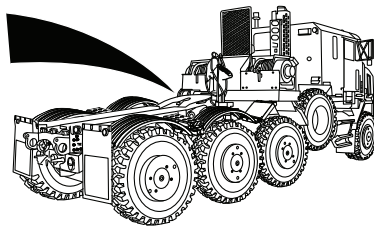
**STEP 1**

**Are any fifth wheel mounting screws or locknuts loose or missing?**

Check for loose or missing fifth wheel mounting screws and locknuts.



**FIFTH WHEEL  
MOUNTING SCREWS**



*Figure 1. Fifth Wheel Mounting Screws.*

**CONDITION/INDICATION**

Are any fifth wheel mounting screws or locknuts loose or missing?

**DECISION**

No - Contact Field Maintenance.

Yes - Fifth wheel mounting screws and/or locknuts need to be installed and/or tightened.

Contact Field Maintenance for torque specifications.

**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE  
FIFTH WHEEL WILL NOT UNLOCK WHEN DISCONNECTING TRAILER FROM HET  
TRACTOR**

---

**INITIAL SETUP:**

**Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

---

**TROUBLESHOOTING PROCEDURE**

**FIFTH WHEEL WILL NOT UNLOCK WHEN DISCONNECTING TRAILER FROM HET  
TRACTOR**

**STEP 1**

**Has dirt, ice, snow, or other debris built up on fifth wheel?**

1. Check if dirt, ice, snow, or other debris has built up on fifth wheel.

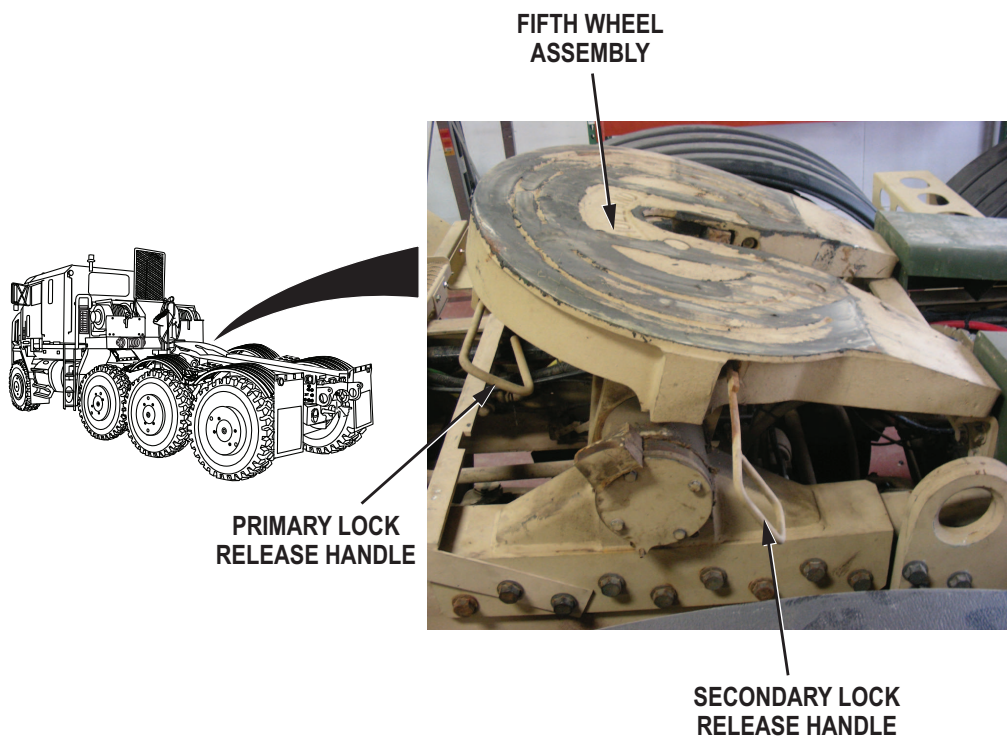


Figure 1. Fifth Wheel.

2. Clean fifth wheel to remove any built-up debris.

#### CONDITION/INDICATION

Has dirt, ice, snow, or other debris built up on fifth wheel?

#### DECISION

No - Step 2 - Is fifth wheel secondary lock release handle in unlocked position?

Yes - Step 6 - Does fifth wheel unlock?

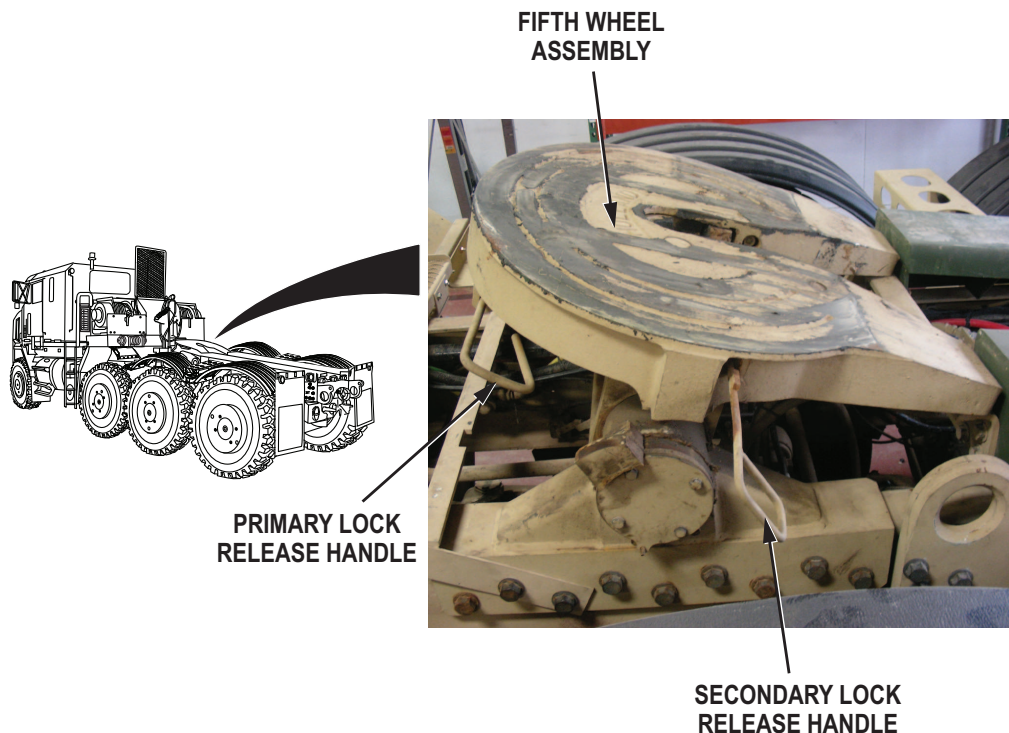
#### STEP 2

**Is fifth wheel secondary lock release handle in unlocked position?**

#### NOTE

It may be necessary to set trailer brakes and move HET Tractor backward slightly to relieve pressure on locking mechanism.

Ensure fifth wheel secondary lock release handle (WP 0022) is in unlocked position.



*Figure 2. Fifth Wheel Primary And Secondary Lock Release Handles.*

#### **CONDITION/INDICATION**

Is fifth wheel secondary lock release handle in unlocked position?

#### **DECISION**

No - Pull fifth wheel secondary lock release handle out to unlocked position.  
(WP 0022) Step 6 - Does fifth wheel unlock?

Yes - Step 3 - Is fifth wheel primary lock release handle in unlocked position?

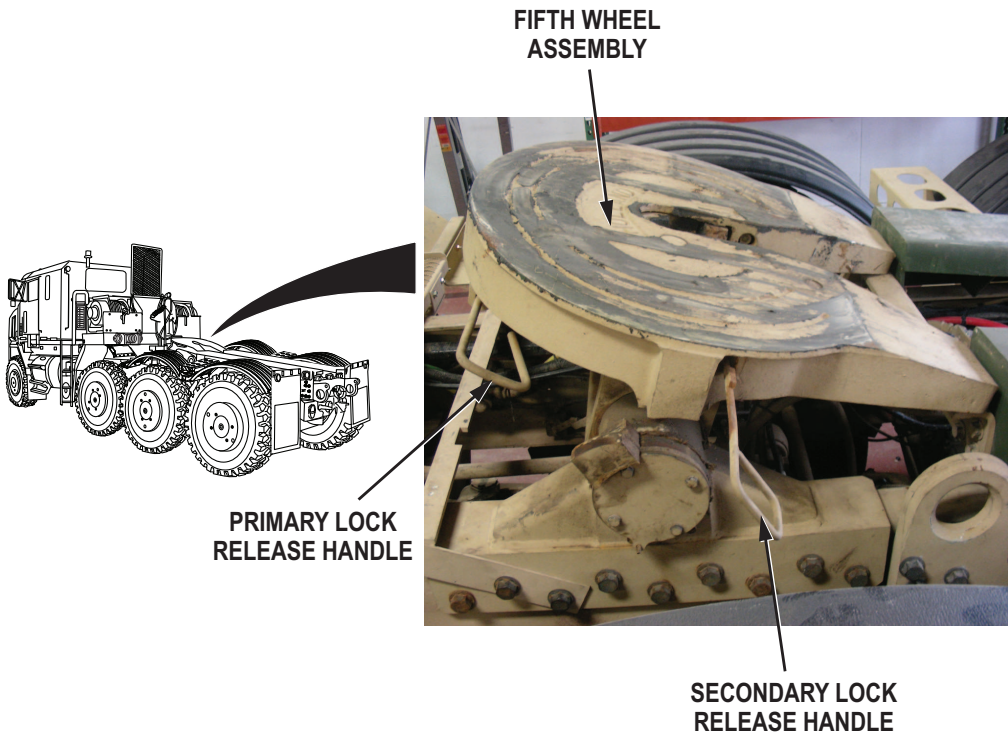
#### **STEP 3**

**Is fifth wheel primary lock release handle in unlocked position?**

#### **NOTE**

It may be necessary to set trailer brakes and move HET Tractor slightly backward to relieve pressure on locking mechanism.

Ensure if fifth wheel primary lock release handle is in unlocked position.



*Figure 3. Fifth Wheel Primary And Secondary Lock Release Handles.*

#### **CONDITION/INDICATION**

Is fifth wheel primary lock release handle in unlocked position?

#### **DECISION**

No - Pull fifth wheel primary lock release handle out to unlocked position.  
(WP 0022) Step 6 - Does fifth wheel unlock?

Yes - Step 4 - Are fifth wheel lubrication fittings properly lubricated?

#### **STEP 4**

##### **Are fifth wheel lubrication fittings properly lubricated?**

Check if fifth wheel lubrication fittings needs lubrication.



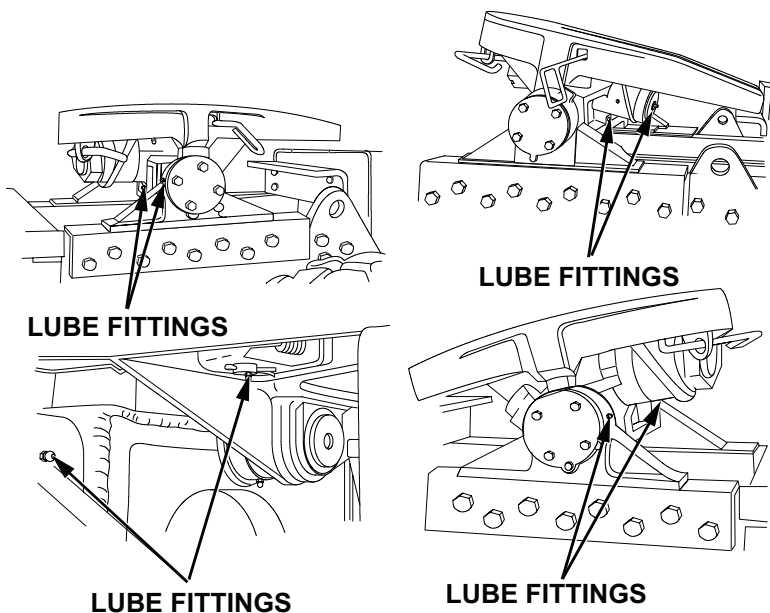


Figure 4. Fifth Wheel Lubrication Fittings.

#### CONDITION/INDICATION

Are fifth wheel lubrication fittings properly lubricated?

#### DECISION

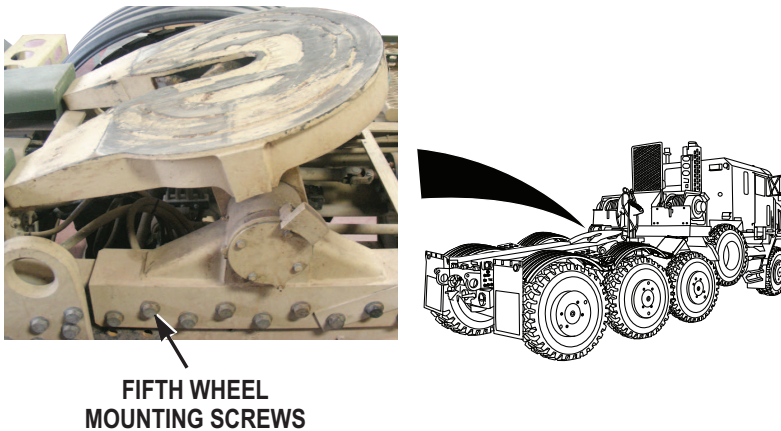
No - Contact Field Maintenance.

Yes - Step 5 - Are any fifth wheel mounting screws or locknuts loose or missing?

#### STEP 5

**Are any fifth wheel mounting screws or locknuts loose or missing?**

Check for loose or missing fifth wheel mounting screws or locknuts.



*Figure 5. Fifth Wheel Mounting Screws.*

**CONDITION/INDICATION**

Are any fifth wheel mounting screws or locknuts loose or missing?

**DECISION**

No - Step 6 - Does fifth wheel unlock?

Yes - Fifth wheel mounting screws or locknuts need to be installed and/or tightened.  
Contact Field Maintenance for torque specifications.

**STEP 6**

**Does fifth wheel unlock?**

Attempt to disconnect trailer (WP 0057) from HET tractor.

**CONDITION/INDICATION**

Does fifth wheel unlock?

**DECISION**

No - Contact supervisor.

Yes - Problem corrected.

**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE**  
**TRANSFER CASE AND/OR TRANSMISSION UNUSUALLY NOISY WHEN OPERATING**

---

**INITIAL SETUP:**

**Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

---

**TROUBLESHOOTING PROCEDURE**

**TRANSFER CASE AND/OR TRANSMISSION UNUSUALLY NOISY WHEN OPERATING**

**STEP 1**

**Is oil level in transfer case low?**

1. Place suitable drain pan under transfer case.

**NOTE**

Oil should be level with bottom of plug hole.

2. Check transfer case oil level. (WP 0124, Table 2)

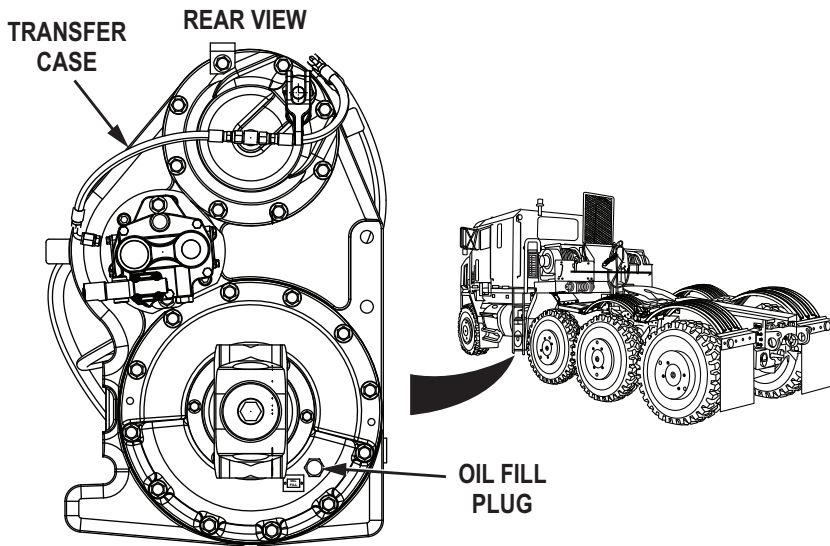


Figure 1. Transfer Case Oil Fill.

- a. If transfer case oil level is low, click on **Yes** button.
- b. If transfer case oil is at proper level, click on **No** button.

#### CONDITION/INDICATION

Is oil level in transfer case low?

#### DECISION

No - Fill transfer case to proper level. Step 3 - Is transmission/transfer case free of unusual noise while operating?

Yes - Step 2 - Is oil level in transmission low?

#### STEP 2

##### Is oil level in transmission low?

Check transmission oil level. (WP 0124)

- a. If transmission oil level is low, click on **Yes** button.
- b. If transmission oil is at proper level, click on **No** button.

#### CONDITION/INDICATION

Is oil level in transmission low?

#### DECISION

No - Fill transmission reservoir to proper level. (WP 0120) Step 3 - Is transmission/transfer case free of unusual noise while operating?

Yes - Step 3 - Is transmission/transfer case free of unusual noise while operating?

**STEP 3****Is transmission/transfer case free of unusual noise while operating?**

1. Start engine. (WP 0045)
2. Bookmark this page and return upon completion of vehicle road test.
3. Perform road test on vehicle.

**CONDITION/INDICATION**

Is transmission/transfer case free of unusual noise while operating?

**DECISION**

No - Contact supervisor.  
Yes - Problem corrected.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE**  
**TRANSMISSION OIL TEMPERATURE GAUGE INDICATES OVERHEATING DURING**  
**NORMAL OPERATION**

---

**INITIAL SETUP:**

**Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

---

**TROUBLESHOOTING PROCEDURE**  
**TRANSMISSION OIL TEMPERATURE GAUGE INDICATES OVERHEATING DURING**  
**NORMAL OPERATION**

**STEP 1**

**Is transmission oil at proper operating level?**

**WARNING**

Parking brake must be set before checking transmission oil. Failure to comply may result in serious injury or death to personnel.

**WARNING**

When servicing this vehicle, performing maintenance, or disposing of materials such as engine coolant, transmission fluid, lubricants, batteries, battery acid or CARC paint, consult your unit/local hazardous waste disposal center or safety office for local regulatory guidance. Improper disposal of this material may result in damage to environment or injury to personnel.

**WARNING**



Use caution when draining hot oil. Oil may burn exposed skin and cause injury to personnel. If injured, seek medical attention immediately.

## CAUTION

- DO NOT start engine until the presence of sufficient transmission fluid has been confirmed. Remove dipstick and be sure static fluid level is near the HOT FULL mark.
- Transmission oil level rises as fluid temperature rises. DO NOT fill transmission above the COLD CHECK band if transmission oil is below normal operating temperature. During operation, an overfull transmission can become overheated, leading to transmission damage.

## NOTE

The correct oil level cannot be determined unless transmission is in a level position.

1. Start engine. (WP 0045)
2. Check transmission oil level (WP 0124). If transmission oil is low, add transmission oil.

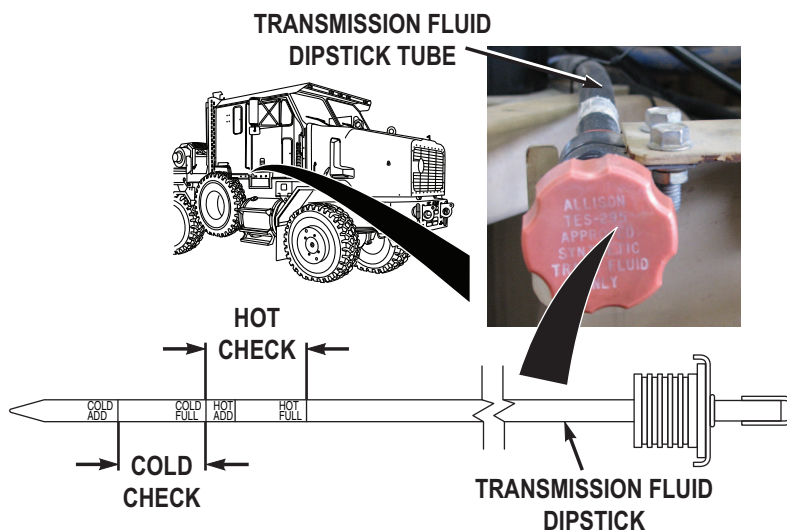


Figure 1. Transmission Oil Level Check.

## CONDITION/INDICATION

Is transmission oil at proper operating level?



**DECISION**

Transmission oil level was high. - Contact supervisor after transmission oil is drained to correct level. Step 2 - Does transmission oil temperature gauge indicate overheating during normal operation?

Transmission oil was at proper level. - Step 2 - Does transmission oil temperature gauge indicate overheating during normal operation?

**STEP 2****Does transmission oil temperature gauge indicate overheating during normal operation?**

1. Start engine. (WP 0045)
2. Bookmark this page and return upon completion of road test.
3. Perform road test on vehicle.

**CONDITION/INDICATION**

Does transmission oil temperature gauge indicate overheating during normal operation?

**DECISION**

Overheating - Contact supervisor.

Correct temperature - Problem corrected.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE**  
**TRANSFER CASE AND/OR TRANSMISSION SLOW OR DIFFICULT ENGAGEMENT**

---

**INITIAL SETUP:**

**Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

---

**TROUBLESHOOTING PROCEDURE**

**TRANSFER CASE AND/OR TRANSMISSION SLOW OR DIFFICULT ENGAGEMENT**

**STEP 1**

**Does transmission and/or transfer case engage normally?**

1. Start engine. (WP 0045)
2. Bookmark this page and return upon completion of road test.
3. Perform road test on vehicle.

**CONDITION/INDICATION**

Does transmission and/or transfer case engage normally?

**DECISION**

No - Contact Field Maintenance.

Yes - Problem corrected.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE  
SPECIAL PURPOSE KITS**

---

**INITIAL SETUP:****Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

---

**TROUBLESHOOTING PROCEDURE  
SPECIAL PURPOSE KITS****STEP 1**

1. Identify and proceed with appropriate system for your problem.
2. Radio Troubleshooting. (WP 0136, Operator's Manual for Radio Sets AN/VRC-12 (NSN 5820-00-223-7412), AN/VRC-43 (5820-00-223-7415), AN/VRC-44 (5820-00-223-7417), AN/VRC-45 (5820-00-223-7418), AN/VRC-46 (5820-00-223-7433), AN/VRC-47 (5820-00-223-7434), AN/VRC-48 (5820-00-223-7435), and AN/VRC-49 (5820-00-223-7437); (used without intercom systems))
3. Chemical Alarm Troubleshooting. (WP 0136, Operator's and Organizational Maintenance Manual for Alarm Chemical)
4. M13 Decontamination Unit Troubleshooting. (WP 0136, Operator's and Unit Maintenance Manual Including Repair Parts and Special Tools List for Decontamination Apparatus)

**CONDITION/INDICATION****DECISION**

-  
Restart or select appropriate troubleshooting procedure. -

**END OF WORK PACKAGE**



**OPERATOR MAINTENANCE  
GAS PARTICULATE FILTER UNIT WILL NOT OPERATE**

---

**INITIAL SETUP:****Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

---

**TROUBLESHOOTING PROCEDURE****GAS PARTICULATE FILTER UNIT WILL NOT OPERATE****STEP 1****Are hoses or clamps faulty?**

1. Check hoses for cuts, tears, cracks and holes.
2. Check hose clamps for damage or looseness.
3. Tighten hose clamps as needed.

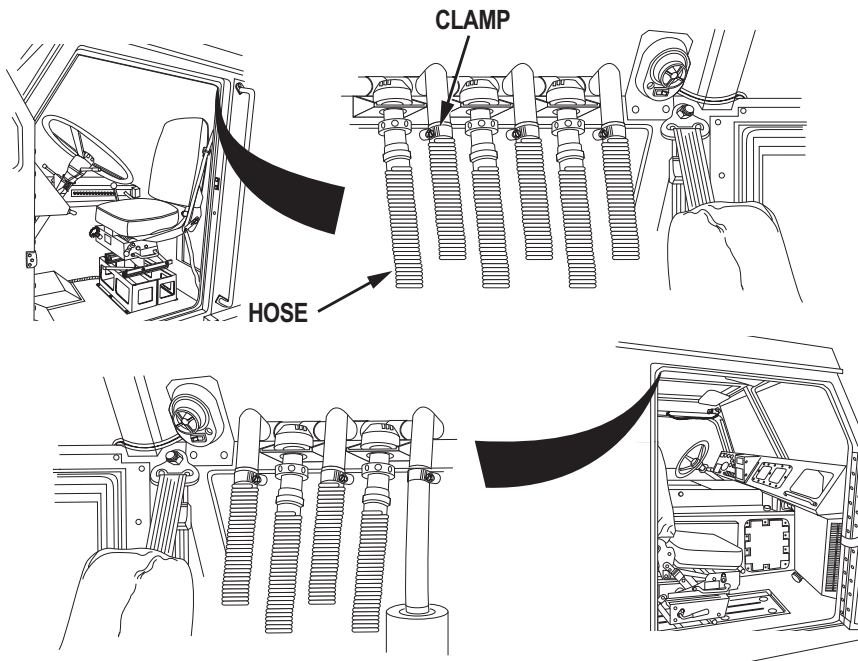


Figure 1. GPFU Hoses And Clamps.

### CONDITION/INDICATION

Are hoses or clamps faulty?

### DECISION

Clamp(s) loose. No damage. - Step 3 - Does GPFU operate properly? Step 2 - Is GPFU circuit breaker tripped?

Damage found. - Contact Field Maintenance.

### STEP 2

Is GPFU circuit breaker tripped?

### NOTE

Breakers open automatically to protect HET Tractor from electrical overloads. Push in circuit breaker buttons to reset.

1. Check if GPFU circuit breaker has been tripped.



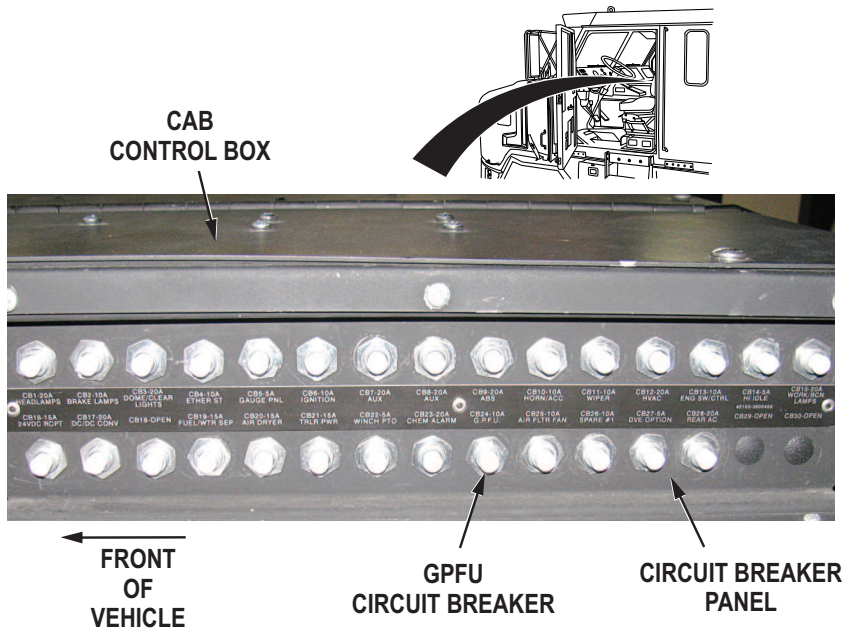


Figure 2. GPFU Circuit Breaker.

2. Reset circuit breaker (WP 0018) if tripped.
3. Click on **Continue** button.

### CONDITION/INDICATION

Is GPFU circuit breaker tripped?

### DECISION

-

Continue - Step 3 - Does GPFU operate properly?

### STEP 3

#### Does GPFU operate properly?

Check GPFU (WP 0059) operation.

### CONDITION/INDICATION

Does GPFU operate properly?

### DECISION

No - Contact Field Maintenance.  
Yes - Problem corrected.

### END OF WORK PACKAGE



---

**OPERATOR MAINTENANCE**  
**HET TRACTOR WANDERS, PULLS TO ONE SIDE, LEANS, OR SHIMMIES**

---

**INITIAL SETUP:****Tools and Special Tools**

Basic Issue Items (BII). (WP 0137)

**Equipment Condition (cont.)**

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

**Equipment Condition**

Engine OFF. (WP 0050)

---

**TROUBLESHOOTING PROCEDURE****HET TRACTOR WANDERS, PULLS TO ONE SIDE, LEANS, OR SHIMMIES****STEP 1****Are tires properly inflated?****WARNING**

Tire air pressure must be checked properly. Failure to comply may result in serious injury or death to personnel.

Check tires (WP 0127) for proper air pressure.

**CONDITION/INDICATION**

Are tires properly inflated?

**DECISION**

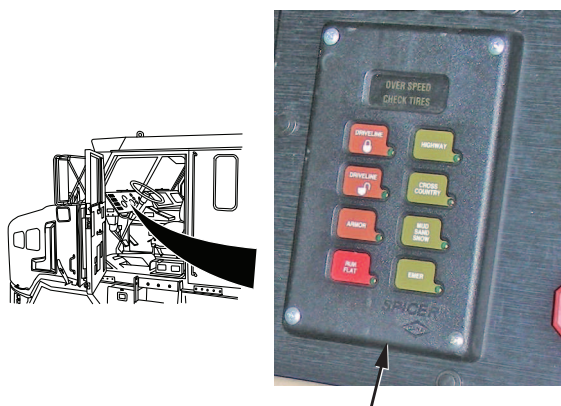
No - Step 2 - Does CTIS operate properly?

Yes - Step 3 - Are wheel lug nuts damaged, loose, or missing?

**STEP 2****Does CTIS operate properly?****NOTE**

CTIS will not operate if air system pressure is less than 85 psi (5.9 bar).

1. Start engine. (WP 0045)
2. Use CTIS control panel to check CTIS operation (WP 0052) by changing CTIS to a higher or lower setting and waiting for operation to complete.



CTIS CONTROLLER

*Figure 1. CTIS Controller.*

### CONDITION/INDICATION

Does CTIS operate properly?

### DECISION

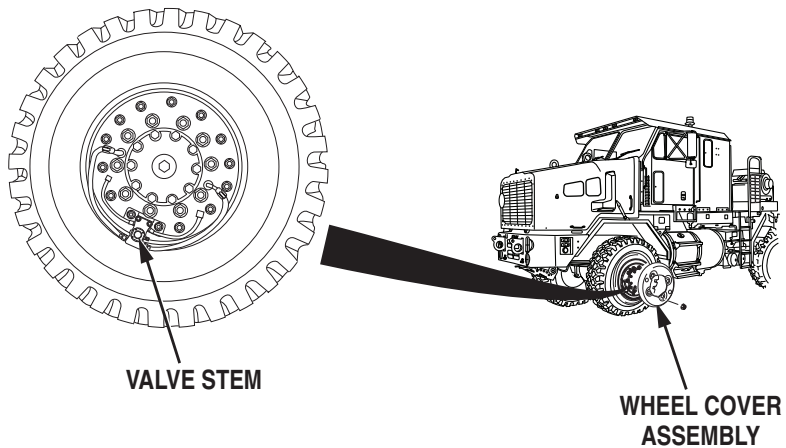
No - Contact supervisor.

Yes - Inflate tires to proper pressure using CTIS. (WP 0052) Step 8 - Does HET tractor wander, pull to one side, lean, or shimmy?

### STEP 3

#### **Are wheel lug nuts damaged, loose, or missing?**

1. Turn (WP 0026) to OFF position.
2. Remove wheel covers. (WP 0118) and inspect lug nuts.



*Figure 2. Wheel and Wheel Cover-HET A1.*

**CONDITION/INDICATION**

Are wheel lug nuts damaged, loose, or missing?

**DECISION**

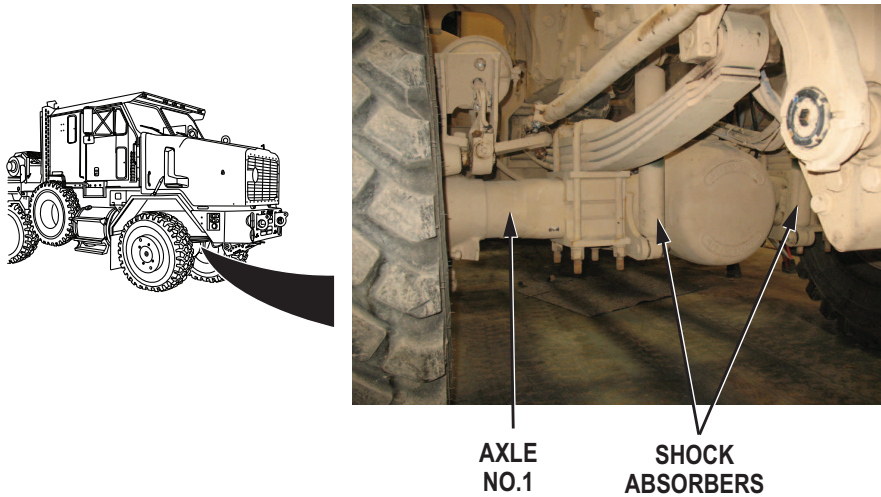
No - Step 4 - Are front axle spring assemblies and/or shock absorbers loose or damaged?

Yes - Replace damaged lug nuts. (WP 0126) Step 8 - Does HET tractor wander, pull to one side, lean, or shimmy?

**STEP 4**

**Are front axle spring assemblies and/or shock absorbers loose or damaged?**

Check front axle spring assemblies and shock absorbers for loose mountings and damage.



*Figure 3. Shock Absorbers.*

#### **CONDITION/INDICATION**

Are front axle spring assemblies and/or shock absorbers loose or damaged?

#### **DECISION**

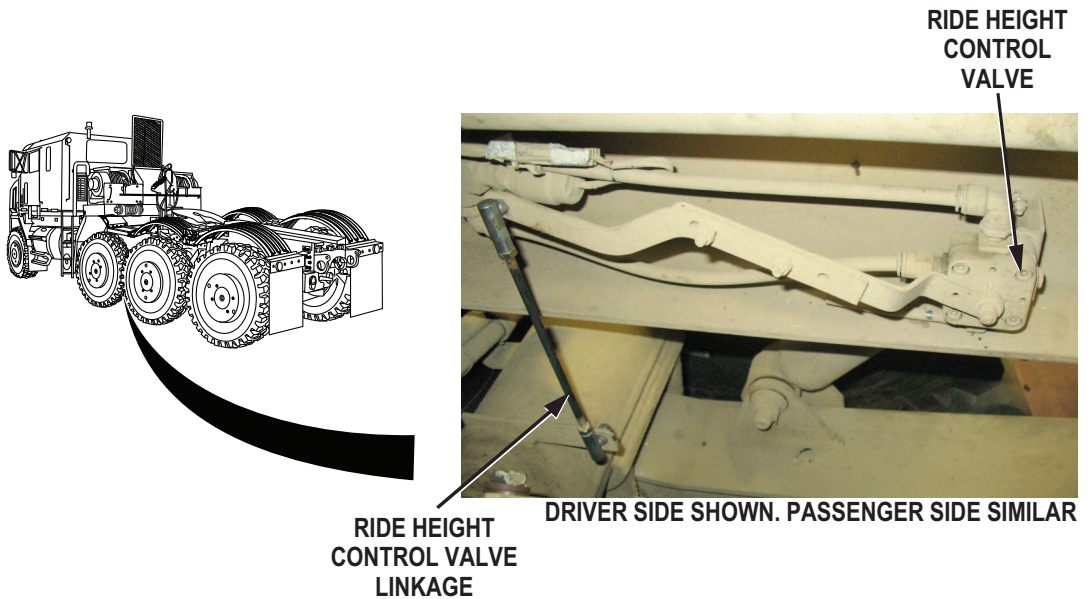
No - Step 5 - Is ride height valve linkage damaged?

Yes - Contact supervisor.

#### **STEP 5**

##### **Is ride height valve linkage damaged?**

Check linkage on ride height valves.



*Figure 4. Ride Height Linkage.*

**CONDITION/INDICATION**

Is ride height valve linkage damaged?

**DECISION**

No - Step 6 - Is ride height level?

Yes - Contact supervisor.

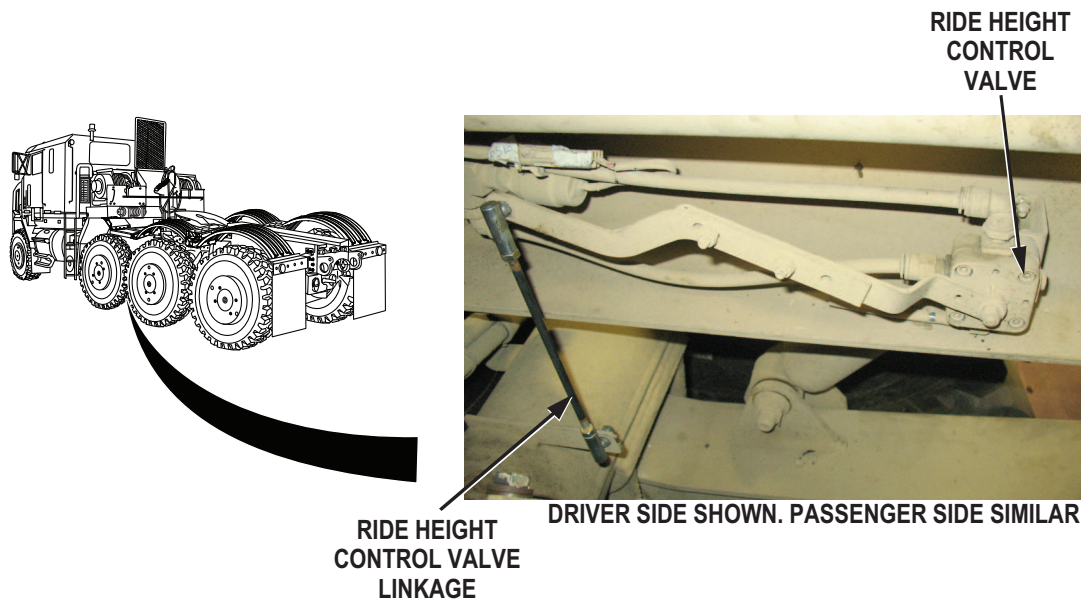
**STEP 6**

**Is ride height level?**

**NOTE**

Difference in distance between bottom of frame and ground should be less than or equal to 1.5 in. (38.1 mm) from side to side.

Check for level ride height.



*Figure 5. Ride Height Linkage.*

#### CONDITION/INDICATION

Is ride height level?

#### DECISION

No - Adjust ride height level. Step 8 - Does HET tractor wander, pull to one side, lean, or shimmy?

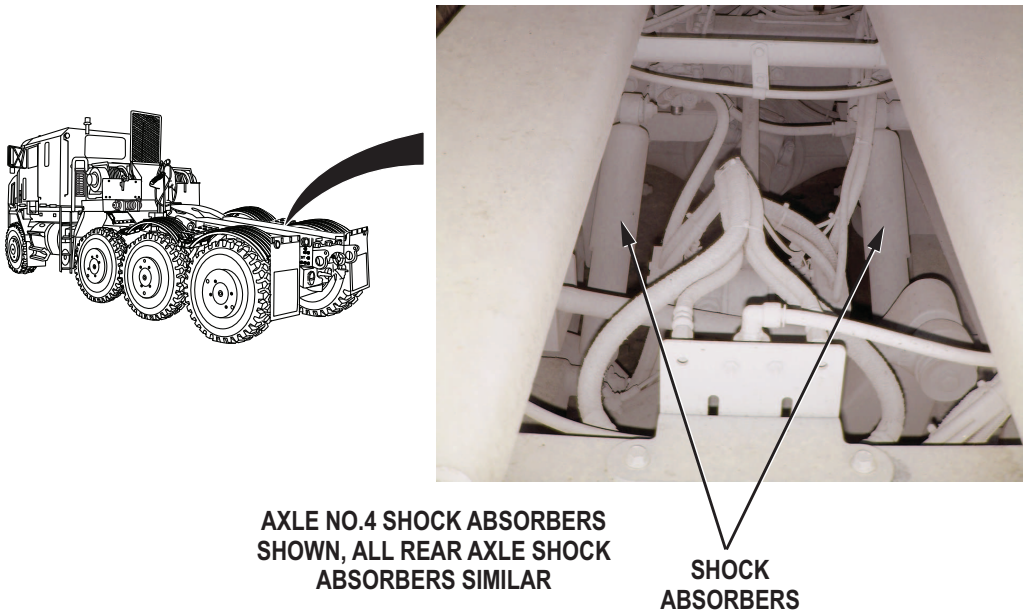
Yes - Step 7 - Are axles No. 2, 3, and 4 air spring assemblies or shock absorbers loose or damaged?

#### STEP 7

**Are axles No. 2, 3, and 4 air spring assemblies or shock absorbers loose or damaged?**

1. Check air spring assemblies and shock absorbers on axles No. 2, 3, and 4 for loose mountings and damage.





*Figure 6. Shock Absorbers.*

2. Check air spring assemblies for leakage.

#### **CONDITION/INDICATION**

Are axles No. 2, 3, and 4 air spring assemblies or shock absorbers loose or damaged?

#### **DECISION**

No - Step 8 - Does HET tractor wander, pull to one side, lean, or shimmy?  
Yes - Contact supervisor.

#### **STEP 8**

##### **Does HET tractor wander, pull to one side, lean, or shimmy?**

1. Ensure vehicle is returned to operating condition.
2. Start engine. (WP 0045)
3. Drive HET tractor at speed where the problem was initially encountered.
4. Bring HET tractor to a full stop.

#### **CONDITION/INDICATION**

Does HET tractor wander, pull to one side, lean, or shimmy?

**DECISION**

No - Problem corrected.

Yes - Contact supervisor.

**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE**  
**HET TRACTOR DIFFICULT TO STEER OR EXCESSIVE PLAY**

---

**INITIAL SETUP:**

**Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brakes applied. (WP 0049)

Wheels chocked. (WP 0036)

---

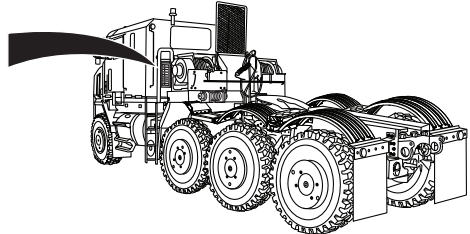
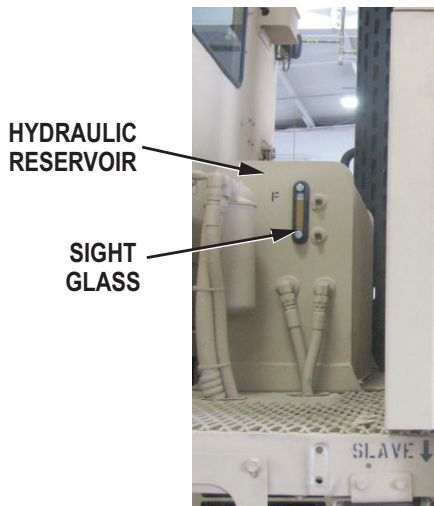
**TROUBLESHOOTING PROCEDURE**

**HET TRACTOR DIFFICULT TO STEER OR EXCESSIVE PLAY**

**STEP 1**

**Is hydraulic fluid reservoir level low?**

Check hydraulic fluid level.



*Figure 1. Hydraulic Oil Reservoir Sight Glass.*

**CONDITION/INDICATION**

Is hydraulic fluid reservoir level low?

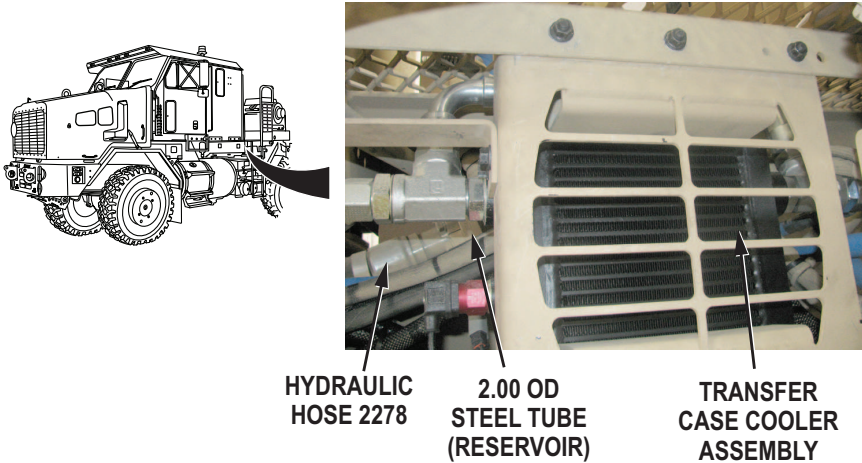
**DECISION**

No - Step 2 - Are power steering fluid lines leaking or damaged?

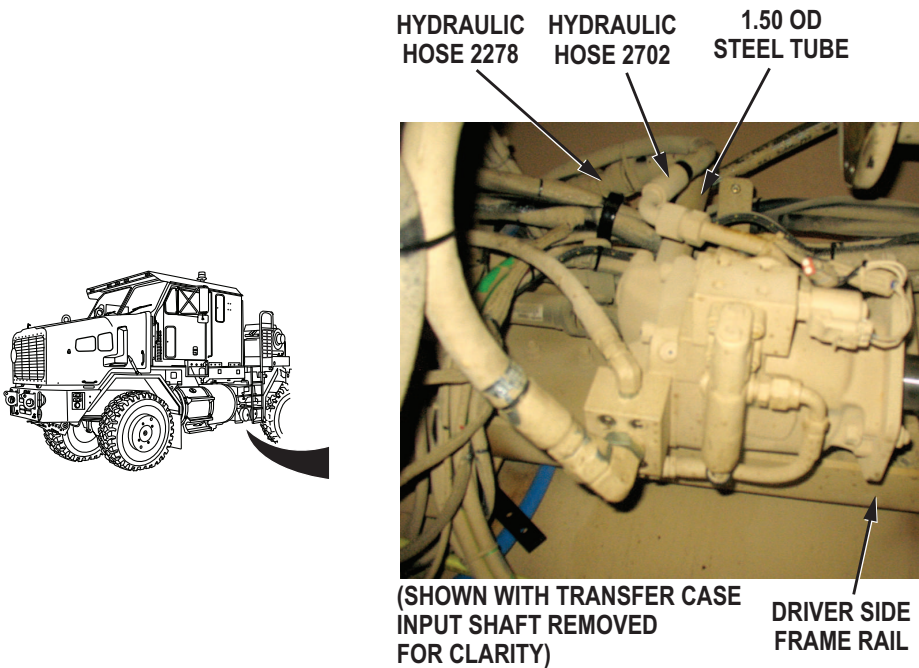
Yes - Fill hydraulic fluid to proper level. (WP 0120) Step 4 - Is vehicle difficult to steer, or is there excessive play in steering wheel?

**STEP 2****Are power steering fluid lines leaking or damaged?**

Visually inspect hydraulic fluid lines for leakage and damage.



*Figure 2. Hydraulic Reservoir Steel Tube and Hose Inspection.*



*Figure 3. Main Steering Pump Steel Tube and Hose Inspection.*

**CONDITION/INDICATION**

Are power steering fluid lines leaking or damaged?

**DECISION**

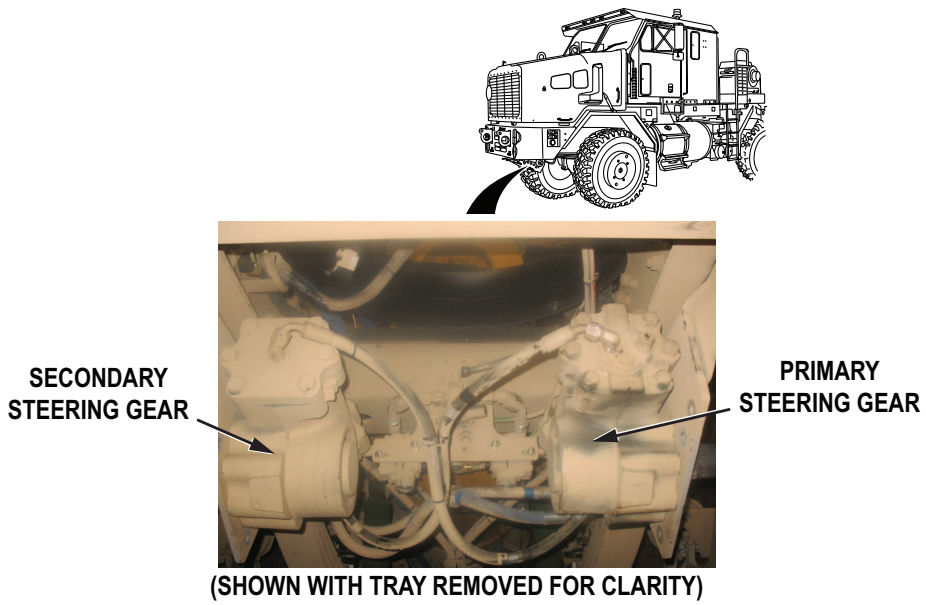
No - Step 3 - Are steering components damaged?

Yes - Contact Supervisor.

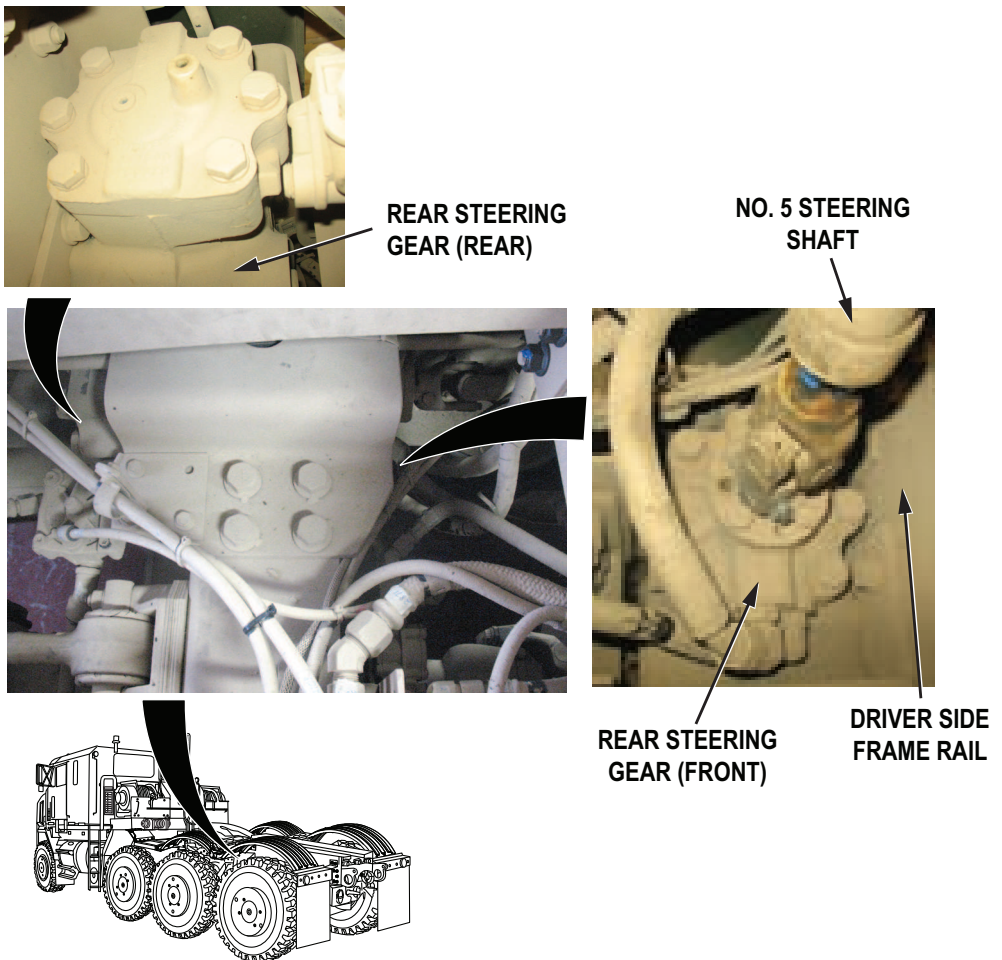
**STEP 3**

**Are steering components damaged?**

Visually inspect steering components for damage.



*Figure 4. Front Primary and Secondary Steering Gear Inspection.*



*Figure 5. Rear Steering Gear Inspection.*

#### **CONDITION/INDICATION**

Are steering components damaged?

#### **DECISION**

No - Step 4 - Is vehicle difficult to steer, or is there excessive play in steering wheel?  
 Yes - Contact supervisor.

#### **STEP 4**

**Is vehicle difficult to steer, or is there excessive play in steering wheel?**

1. Ensure vehicle is returned to operating condition.
2. Start engine. (WP 0045)
3. Drive vehicle (WP 0028) at speed where the problem was initially encountered.

4. Bring vehicle to a full stop.

**CONDITION/INDICATION**

Is vehicle difficult to steer, or is there excessive play in steering wheel?

**DECISION**

No - Problem corrected.

Yes - Contact supervisor.

**END OF WORK PACKAGE**



---

## OPERATOR MAINTENANCE TIRES WORN UNEVENLY OR EXCESSIVELY

---

### INITIAL SETUP:

#### Equipment Condition

Engine OFF. (WP 0050)

#### Equipment Condition (cont.)

Parking brakes applied. (WP 0049)

Wheels chocked. (WP 0036)

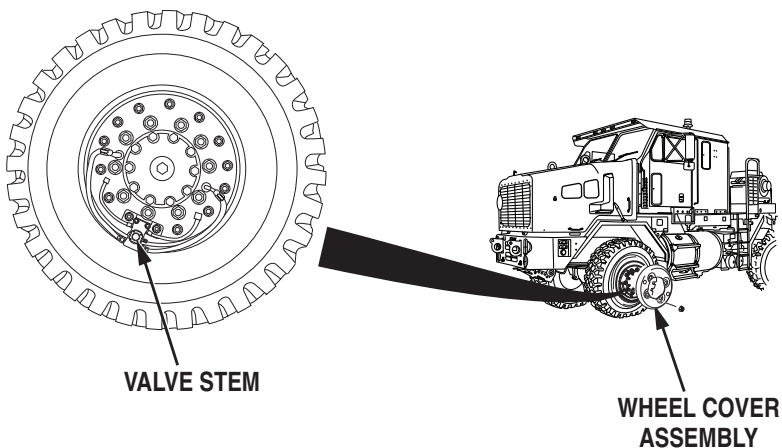
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### TROUBLESHOOTING PROCEDURE TIRES WORN UNEVENLY OR EXCESSIVELY

#### STEP 1

##### Are tires properly inflated?

Check tires (WP 0127) for proper air pressure.



*Figure 1. Tire Pressure Check.*

#### CONDITION/INDICATION

Are tires properly inflated?

#### DECISION

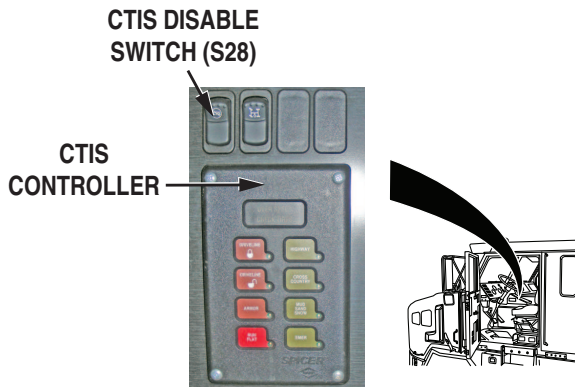
No - Step 2 - Does CTIS operate properly?

Yes - See Maintenance.

**STEP 2****Does CTIS operate properly?****NOTE**

CTIS will not operate if air system pressure is less than 85 psi (5.9 bar).

1. Start engine. (WP 0045)
2. Check CTIS operation (WP 0052) by selecting a higher or lower setting on CTIS control panel, and waiting for operation to stop.



*Figure 2. CTIS Control Panel.*

**CONDITION/INDICATION**

Does CTIS operate properly?

**DECISION**

No - Contact Maintenance.

Yes - Inflate tires to proper level using CTIS. (WP 0052)Contact supervisor.

**END OF WORK PACKAGE**

---

## OPERATOR MAINTENANCE WHEEL WOBBLES OR SHIMMIES

---

### INITIAL SETUP:

#### Equipment Condition

Engine OFF. (WP 0050)

#### Equipment Condition (cont.)

Parking brakes applied. (WP 0049)

Wheels chocked. (WP 0036)

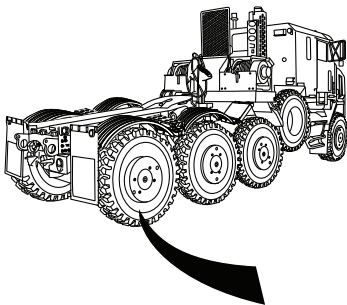
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### TROUBLESHOOTING PROCEDURE WHEEL WOBBLES OR SHIMMIES

#### STEP 1

##### Are tires free of damage?

Check tires for damage.



TIRE

*Figure 1. Tire.*

#### CONDITION/INDICATION

Are tires free of damage?

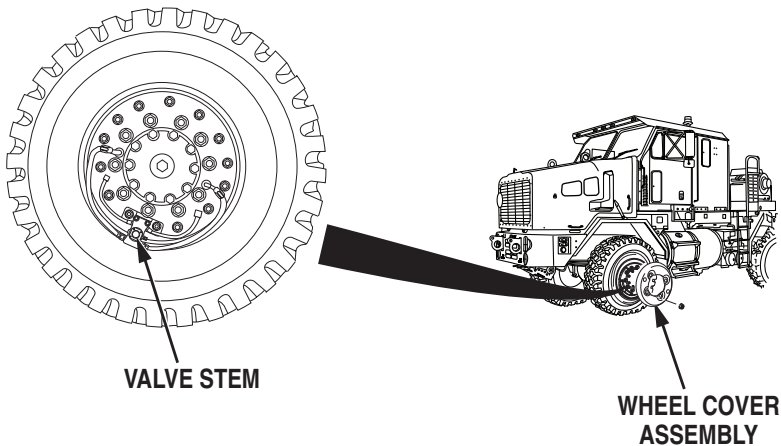
#### DECISION

No - Contact field maintenance.

Yes - Step 2 - Are wheel lugnuts tight and free of damage?

**STEP 2****Are wheel lugnuts tight and free of damage?**

1. Remove wheel covers. (WP 0118)



*Figure 2. Tire Pressure Check.*

2. Check for damaged, loose, and missing wheel lugnuts.
3. Tighten any loose wheel lugnuts.

**CONDITION/INDICATION**

Are wheel lugnuts tight and free of damage?

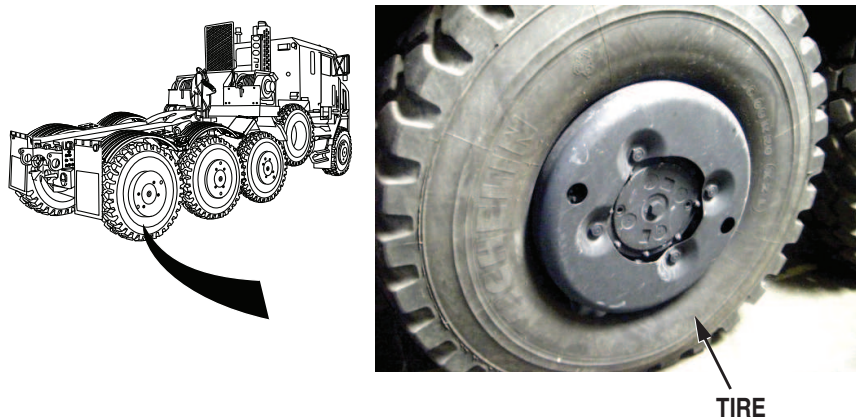
**DECISION**

No - Contact field maintenance.

Yes - Step 3 - Are any wheels bent?

**STEP 3****Are any wheels bent?**

Visually check all wheels for bent or damaged condition.



*Figure 3. Tire.*

### CONDITION/INDICATION

Are any wheels bent?

### DECISION

No - Step 4 - Does wheel wobble or shimmy?

Yes - Contact field maintenance.

### STEP 4

#### Does wheel wobble or shimmy?

1. Ensure vehicle is returned to normal operating condition.
2. Start engine. (WP 0045)
3. Drive HET tractor at speed where problem was encountered.
4. Bring HET tractor to a full stop.
5. Shut OFF engine. (WP 0050)

### CONDITION/INDICATION

Does wheel wobble or shimmy?

### DECISION

No - Problem corrected.

Yes - Contact field maintenance.

### END OF WORK PACKAGE



---

**OPERATOR MAINTENANCE  
WINCHES WILL NOT OPERATE**

---

**INITIAL SETUP:**

**Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brakes applied. (WP 0049)

Wheels chocked. (WP 0036)

---

**TROUBLESHOOTING PROCEDURE  
WINCHES WILL NOT OPERATE**

**STEP 1**

**Is PTO engaged?**

1. Start engine. (WP 0045)
2. Check if PTO is engaged.

**CONDITION/INDICATION**

Is PTO engaged?

**DECISION**

No - Step 4 - Do winches operate properly?

Yes - Step 2 - Are any circuit breakers tripped?

**STEP 2**

**Are any circuit breakers tripped?**

**NOTE**

Breakers open automatically to protect HET Tractor from electrical overloads. Push in circuit breaker buttons to reset.

Check if any circuit breakers are tripped.

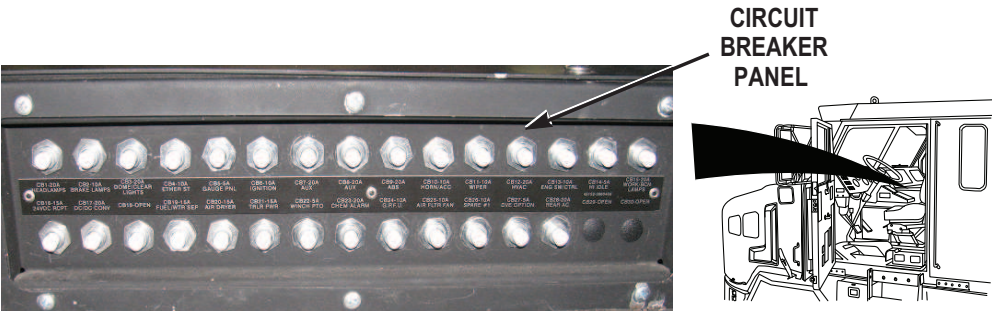


Figure 1. Circuit Breaker Panel.

**CONDITION/INDICATION**

Are any circuit breakers tripped?

**DECISION**

No - Step 3 - Is hydraulic fluid level correct?

Yes - Reset tripped circuit breakers.

**STEP 3**

**Is hydraulic fluid level correct?**

Check hydraulic fluid level. (WP 0120, Step 1)



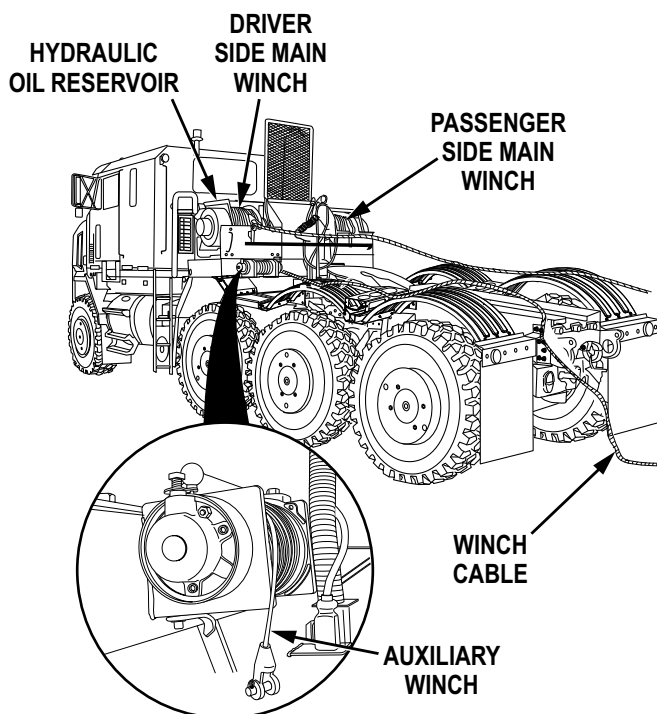


Figure 2. Hydraulic Fluid Reservoir.

**CONDITION/INDICATION**

Is hydraulic fluid level correct?

**DECISION**

No - Contact supervisor.

Yes - Step 4 - Do winches operate properly?

**STEP 4**

**Do winches operate properly?**

1. Start engine. (WP 0045)
2. Enable PTO.
3. Check for correct winch (WP 0021) operation.

**CONDITION/INDICATION**

Do winches operate properly?

**DECISION**

No - Contact Field Maintenance.  
Yes - Problem corrected.

**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE  
WINCHES UNUSUALLY NOISY WHEN OPERATING**

---

**INITIAL SETUP:**

**Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brakes applied. (WP 0049)

Wheels chocked. (WP 0036)

---

**TROUBLESHOOTING PROCEDURE  
WINCHES UNUSUALLY NOISY WHEN OPERATING**

**STEP 1**

**Is winch cable twisted, tangled, or causing drum to bind?**

Check if cable is twisted, tangled, or causing drum to bind.

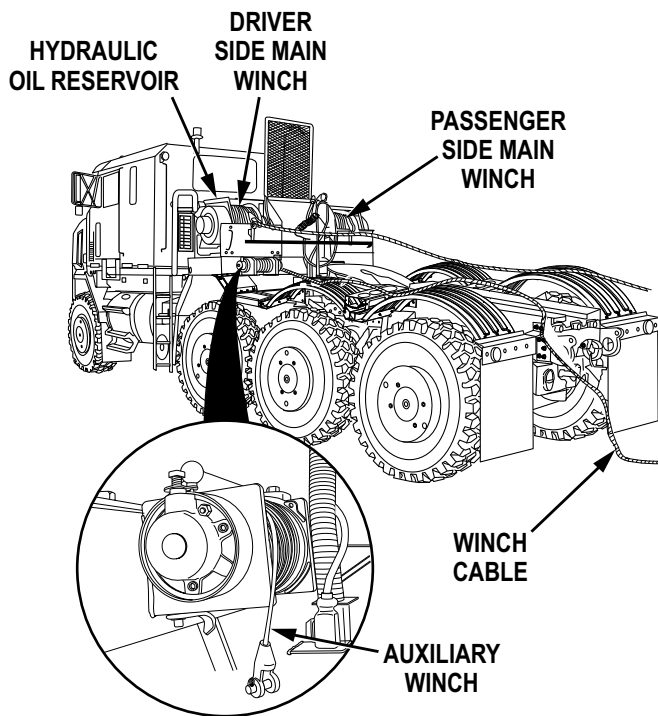


Figure 1. Winch Cable.

#### CONDITION/INDICATION

Is winch cable twisted, tangled, or causing drum to bind?

#### DECISION

No - Contact Field Maintenance.

Yes - Step 2 - Can cable be straightened or untangled?

#### STEP 2

##### Can cable be straightened or untangled?

1. Let out or take in winch cable (WP 0021) as necessary to straighten cable and free drum.

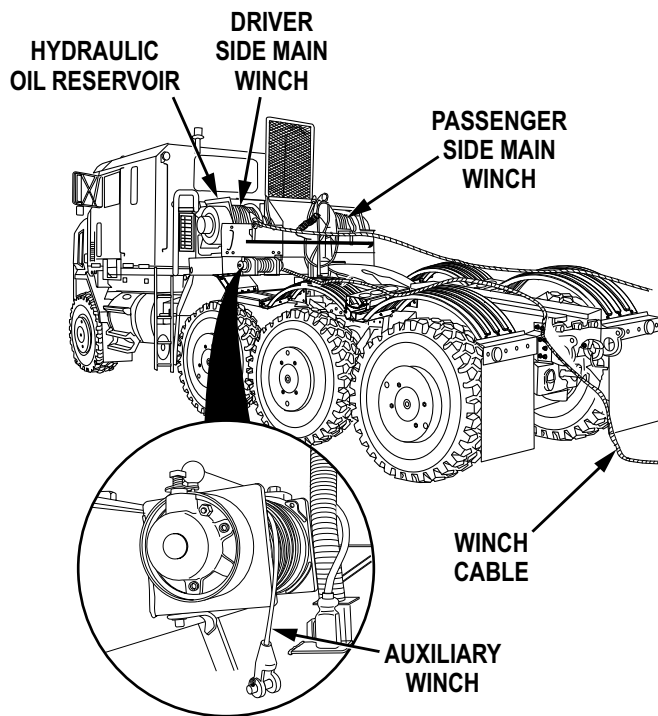


Figure 2. Winch Cable.

2. Operate winch and check for unusual noises.

**CONDITION/INDICATION**

Can cable be straightened or untangled?

**DECISION**

No - Contact Field Maintenance.

Yes - Problem corrected.

**END OF WORK PACKAGE**



---

**OPERATOR MAINTENANCE**  
**WINCH OPERATES TOO SLOW, TOO FAST, OR ONLY ONE SPEED**

---

**INITIAL SETUP:**

**Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

---

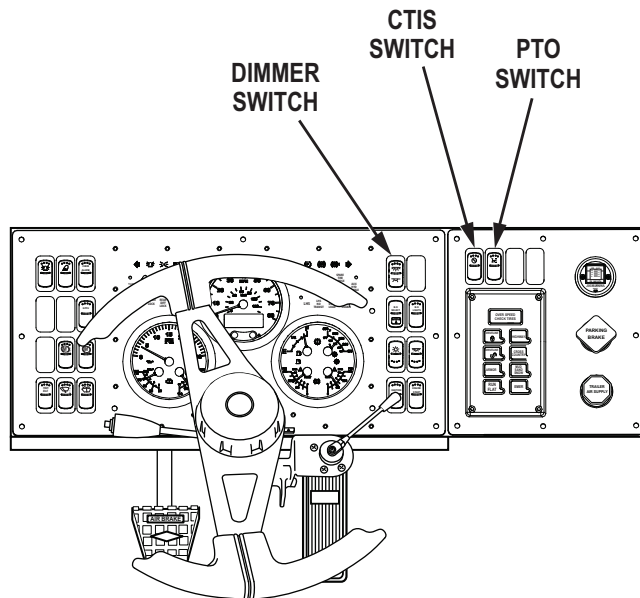
**TROUBLESHOOTING PROCEDURE**

**WINCH OPERATES TOO SLOW, TOO FAST, OR ONLY ONE SPEED**

**STEP 1**

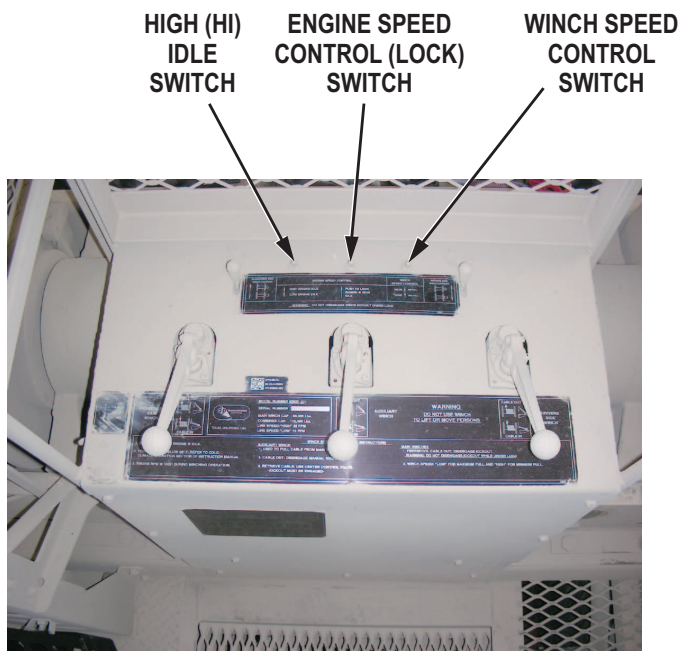
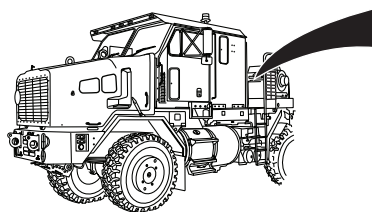
**Is engine speed 1450-1500 rpm with PTO engaged?**

1. Start engine. (WP 0045)
2. Engage PTO.



*Figure 1. PTO Switch.*

3. Have an assistant engage engine speed control switch from "low engine idle" to "high engine idle".



*Figure 2. Winch Controls.*

4. Have an assistant engage engine speed control switch to lock engine at high idle.
5. Monitor engine speed with tachometer.
6. Have an assistant engage engine speed control switch from "high engine idle" to "low engine idle".
7. Disengage PTO.
8. Shut OFF engine. (WP 0050)

#### **CONDITION/INDICATION**

Is engine speed 1450-1500 rpm with PTO engaged?

#### **DECISION**

No - Contact Field Maintenance.

Yes - Step 2 - Is hydraulic fluid level correct?

#### **STEP 2**

##### **Is hydraulic fluid level correct?**

Check hydraulic fluid level. (WP 0120, Step 1)



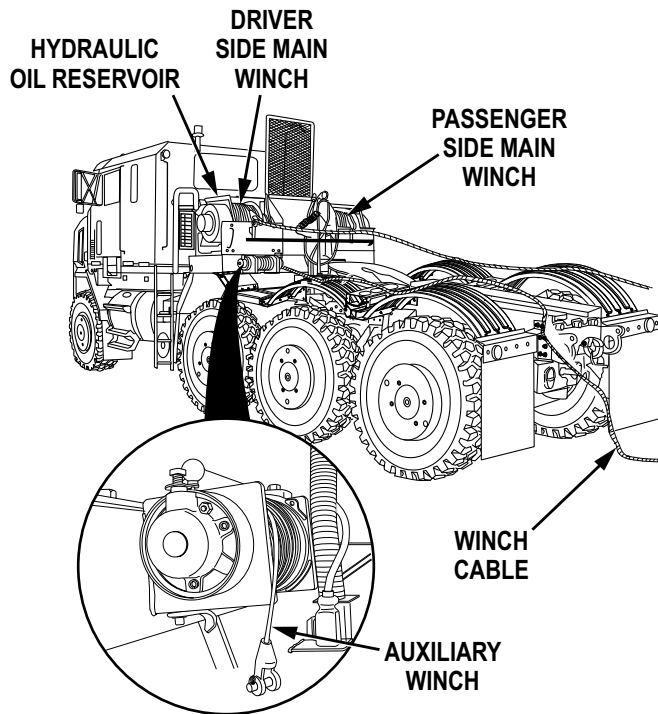


Figure 3. Hydraulic Fluid Reservoir.

**CONDITION/INDICATION**

Is hydraulic fluid level correct?

**DECISION**

No - Contact supervisor.

Yes - Step 3 - Is transmission fluid level normal?

**STEP 3**

**Is transmission fluid level normal?**

Check transmission fluid level. (WP 0120)

**CONDITION/INDICATION**

Is transmission fluid level normal?

**DECISION**

No - Contact supervisor.

Yes - Step 4 - Does winch operate properly?

**STEP 4****Does winch operate properly?**

1. Start engine. (WP 0045)
2. Engage PTO.
3. Check for proper winch operation. (WP 0058)

**CONDITION/INDICATION**

Does winch operate properly?

**DECISION**

No - Contact Field Maintenance.  
Yes - Problem corrected.

**END OF WORK PACKAGE**

---

**OPERATOR MAINTENANCE  
CABLE HOLD DOWN DOES NOT OPERATE**

---

**INITIAL SETUP:**

**Equipment Condition**

Engine OFF. (WP 0050)

**Equipment Condition (cont.)**

Parking brakes applied. (WP 0049)

Wheels chocked. (WP 0036)

---

**TROUBLESHOOTING PROCEDURE  
CABLE HOLD DOWN DOES NOT OPERATE**

**STEP 1**

**Do FRONT and REAR air pressure gauges show a pressure of at least 70 psi (4.8 bar)?**

1. Start engine. (WP 0045)
2. Check front and rear air pressure gauges for a reading of over 70 psi (4.8 bar).

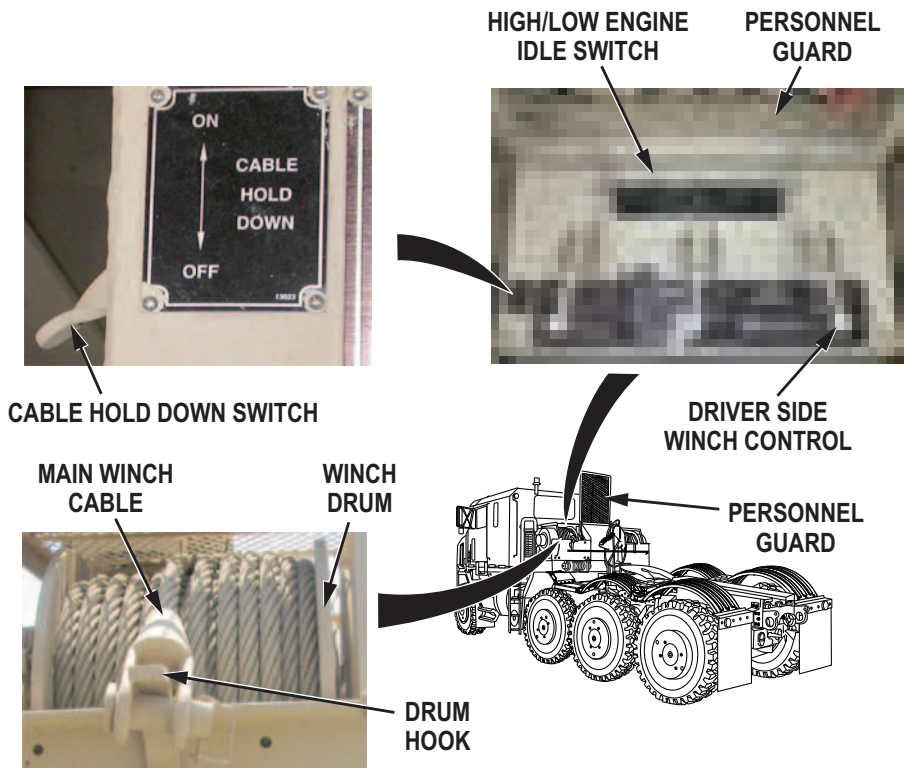


Figure 1. Winch Cable Controls.

### CONDITION/INDICATION

Do FRONT and REAR air pressure gauges show a pressure of at least 70 psi (4.8 bar)?

### DECISION

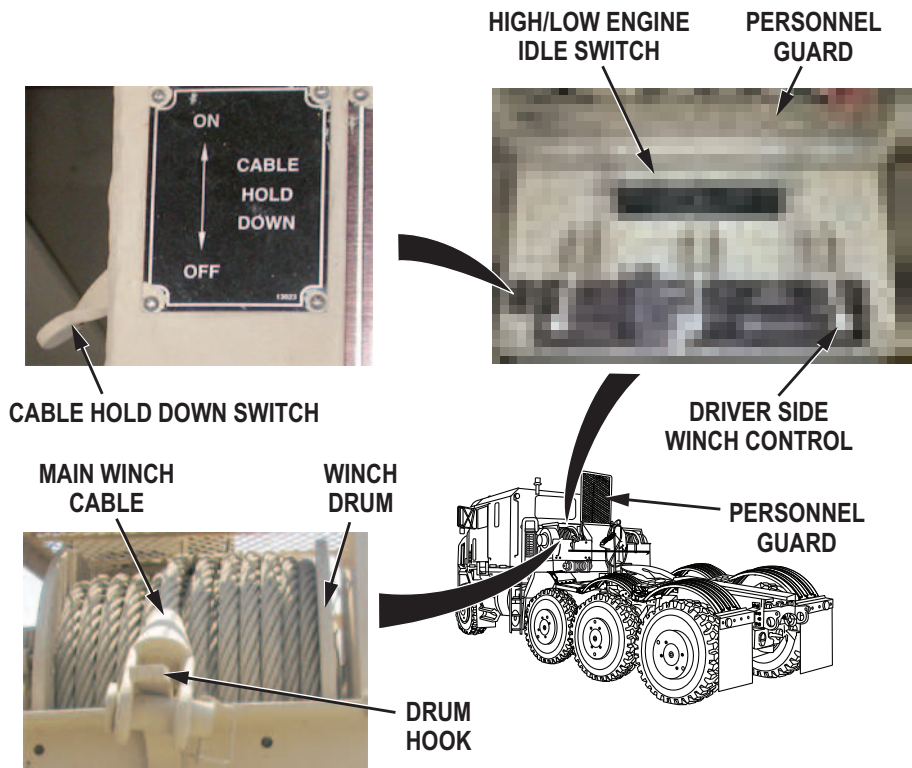
No - Contact supervisor.

Yes - Step 2 - Does cable hold down operate?

### STEP 2

#### Does cable hold down operate?

1. Ensure vehicle is returned to normal operating condition.
2. Start engine (WP 0045) and run at 1450-1500 rpm for at least one minute to allow air pressure to build.
3. Shut OFF engine. (WP 0050)
4. Move cable hold down switch from OFF to ON while watching cable hold down assembly.

**CONDITION/INDICATION**

Does cable hold down operate?

**DECISION**

No - Contact Field Maintenance.

Yes - Problem corrected.

**END OF WORK PACKAGE**



**CHAPTER 4**

**PREVENTIVE MAINTENANCE CHECKS AND  
SERVICES (PMCS)**





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## OPERATOR MAINTENANCE

### INTRODUCTION - PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

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#### PMCS INTRODUCTION

This section provides information to guide the Heavy Equipment Transporter (HET) Tractor operator/crew in performing required PMCS functions. The PMCS tables contain checks and services necessary to ensure that the truck is ready for operation. Using PMCS tables, perform maintenance at specified intervals.

#### MAINTENANCE FORMS AND RECORDS

Every mission begins and ends with paperwork. There is not much of it, but it must be kept up. The filled out forms and records have several uses. They are a permanent record of services, repairs, and modifications made on the vehicle; they are reports to unit maintenance and to your Commander; and they serve as a checklist to find out what is wrong with the vehicle after its last use, and whether those faults have been fixed. For the information needed on forms and records, refer to (WP 0136)

#### EXPLANATION OF COLUMNS

- **Item Number Column.** Numbers in this column shall be used as a source of item numbers for the TM Number Column on (WP 0136) (Equipment Inspection and Maintenance Worksheet), in recording results of PMCS.
- **Interval Column.** The interval column tells you when to do a certain check or service. Semiannual PMCS must be performed every 6 months, and annual PMCS must be performed every 12 months.
- **Item to be Inspected Column.** This column tells you the item to be checked/serviced.
- **Procedure Column.** The procedure column of your PMCS table tells you how to do the required checks and services.
- **Not Fully Mission Capable If: Column.** This column tells you what faults will keep your HET Tractor from being capable of performing its primary mission. If you perform check and service procedures that show faults listed in this column, do not operate the HET Tractor. Follow standard operating procedures for maintaining the HET Tractor or reporting equipment failure.

#### PREVENTIVE MAINTENANCE CHECKS AND SERVICES

- Do the before (B) PREVENTIVE MAINTENANCE just before operating vehicle. Pay attention to the CAUTIONS and WARNINGS.
- Do the during (D) PREVENTIVE MAINTENANCE while vehicle and/or its component systems are in operation. Pay attention to the CAUTIONS and WARNINGS.

## PREVENTIVE MAINTENANCE CHECKS AND SERVICES - Continued

- Do the after (A) PREVENTIVE MAINTENANCE right after operating vehicle. Pay attention to the CAUTIONS and WARNINGS.
- Do the (W) PREVENTIVE MAINTENANCE weekly. Pay attention to the CAUTIONS and WARNINGS.
- Do the (M) PREVENTIVE MAINTENANCE once a month. Pay attention to the CAUTIONS and WARNINGS.
- Do the (S) PREVENTIVE MAINTENANCE twice a year. Pay attention to the CAUTIONS and WARNINGS.
- If something does not work, troubleshoot and notify the supervisor.
- Always do PREVENTIVE MAINTENANCE in the same order until it gets to be a habit. Once practiced, problems can be spotted in a hurry.
- If something looks wrong and cannot be fixed right then, write it on (WP 0136) or (WP 0136) If something seems seriously wrong, report it to field level maintenance as soon as possible.
- When doing PREVENTIVE MAINTENANCE, take along the tools needed and a rag or two to make all the checks.

## GENERAL MAINTENANCE PROCEDURE

During PMCS, keep the following general maintenance procedures in mind:

- **Cleanliness:** Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Use solvent cleaning compound (WP 0139, Table 1, Item 7, 8, 9, 10, 11, 12) on all metal surfaces and soapy water on rubber.
- **Bolts, Nuts, and Screws:** Check bolts, nuts, and screws for obvious looseness, missing, bent, or broken condition and tighten or replace as necessary. They cannot all be checked with a tool, of course, but look for chipped paint, bare metal, or rust around bolt heads.
- **Welds:** Look for loose or chipped paint, rust, or gaps where parts are welded together. If a bad weld is found, see field maintenance.
- **Electric Wires and Connectors:** Look for cracked or broken insulation, bare wires, and loose or broken connectors. Tighten loose connectors and make sure wires are serviceable. If a wire or connector is bad, see field maintenance.
- **Fluid Hoses and Fittings:** Look for wear, damage, and leaks, and make sure clamps and fittings are tight. Wet spots show leaks, of course, but a stain around a fitting or connector can indicate a leak. If a connector or fitting is loose, tighten it. If something is broken or worn out, repair or replace per applicable procedure.
- **Damage is defined as:** Any conditions that affect safety or would render the vehicle unserviceable for mission requirements.

## FLUID LEAKAGE

It is necessary to know how fluid leakage affects the status of fuel, oil, coolant, and the hydraulic systems. The following are definitions of types/classes of leakage necessary to know in order to determine the status of the vehicle.

**FLUID LEAKAGE - Continued****NOTE**

Equipment operation is allowable with minor leakage (Class I or II). Consideration must be given to the fluid capacity in the item/system being checked/inspected. When in doubt, notify the supervisor. When operating with Class I or II leaks, continue to check fluid levels as required in the PMCS. Class III leaks should be repaired per applicable procedure.

**Class I:** Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.

**Class II:** Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.

**Class III:** Leakage of fluid great enough to form drops that fall from the item being checked/inspected.

**WARNING AND CAUTIONS**

Always observe the WARNINGS and CAUTIONS appearing in your PMCS table. WARNINGS and CAUTIONS appear before applicable procedures. You must observe these WARNINGS and CAUTIONS to prevent serious injury to yourself and others or prevent your HET Tractor from being damaged.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)**

Prior to performing your PMCS, check with your supervisor to verify that the latest publications are being used by the operator and organizational unit.

Listed below are the sections of the PMCS.

PMCS - BEFORE (WP 0118)

PMCS - DURING (WP 0119)

PMCS - AFTER (WP 0120)

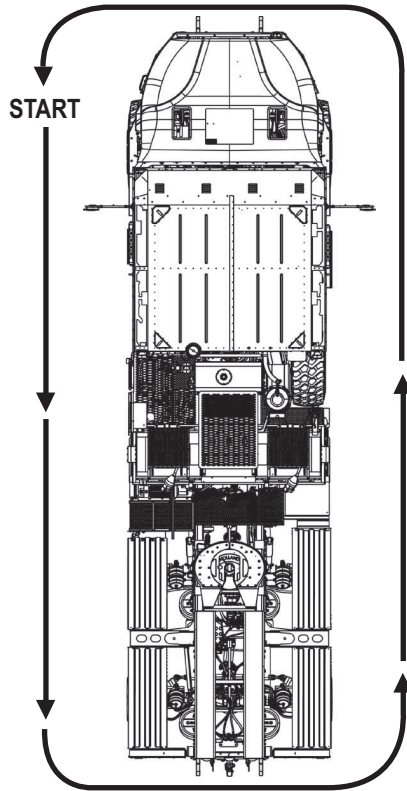
PMCS - WEEKLY (WP 0121)

PMCS - MONTHLY (WP 0122)

PMCS - SEMIANNUAL (WP 0123)

Vehicles designated or dispatched to transport Class A or B ammunition, explosives, poisons, or radioactive yellow III materials over public highways require more stringent inspections.

Daily Walk Around PMCS Diagram. This routing diagram will be of help to complete the B, D, or A PMCS. It shows the vehicle PMCS routing track, which matches the sequence of PMCS to be performed.

**PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - Continued**

*Figure 1. Daily Walk Around PMCS Diagram.*

**END OF WORK PACKAGE**

OPERATOR MAINTENANCE  
BEFORE - PREVENTIVE MAINTENANCE

INITIAL SETUP:

Materials/Parts

Grease, Automotive and Artillery  
(GAA) (WP 0139, Table 1, Item 20,  
21, 22)

References

AR 385-10 (WP 0136)

Table 1. PMCS - BEFORE

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p><b>WARNING</b></p> <p>Do not start engine or move Heavy Equipment Transporter (HET) Tractor when anyone is under HET Tractor or working on brake lines. Failure to comply may result in serious injury or death to personnel.</p> <p><b>WARNING</b></p> <p>Do not back up Heavy Equipment Transporter (HET) Tractor without a ground guide. The location of the ground guide must be known at all times. Failure to comply may</p>	

Table 1. PMCS - BEFORE - Continued


ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>result in serious injury or death to personnel.</p> <p><b>WARNING</b></p>  <p>Ensure engine is OFF and eye protection is worn when checking for leaks. Failure to comply may result in serious injury or death to personnel.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"><li>• Perform Operator's Before, After, and Weekly PMCS checks if:</li><li>• You are the assigned driver but have not operated the HET Tractor since the last weekly inspection.</li><li>• You are operating the HET Tractor for the first time.</li></ul>	

Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<ul style="list-style-type: none"><li>• Clean all lubrication points with solvent cleaning compound and allow to dry prior to servicing.</li><li>• When using a grease gun, apply lubricant to the fitting until clean lubricant is squeezed out of the part being lubricated.</li><li>• Always refer to lubrication instructions to ensure equipment has correct lubricants appropriate to the operating environment (expected continuous temperatures). If not, remove/drain and reapply/refill equipment with appropriate lubricants for operating environment as prescribed in lubrication instructions. (WP 0124)</li></ul>	

Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<ul style="list-style-type: none"><li>• If leakage is detected, further investigation is needed to determine the location and cause. If there is any doubt, contact your supervisor or field level maintenance.</li><li>• When operating with Class I or Class II leaks, continue to check fluid levels as required in the PMCS.</li><li>• Refer to table below for operator PMCS procedures for the HET Tractor. Perform your PMCS starting with the left front of the HET Tractor and continuing counterclockwise around the HET Tractor.</li></ul>	
1	Before	Exterior	1. Walk around exterior HET Tractor and visually inspect cab, body, and components for obvious damage that would impair operation:	Any damage that would impair operation.



*Table 1. PMCS - BEFORE - Continued*

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>a. Listen for air leaks.</p> <p><b>NOTE</b></p> <p>If leakage is detected, further investigation is needed to determine the location and cause of the leak. If there is any doubt, contact your supervisor.</p> <p>b. Check underside of HET Tractor for evidence of damage or fluid leakage.</p> <p>c. Check driver side mud flaps (1) and fenders (2) are present, intact, and all hardware is in place.</p>	<p>Any air lines/fittings leaking or damaged.</p> <p>Any damage that would impair operation, any fuel leak, or Class III leak.</p>

Table 1. PMCS - BEFORE - Continued

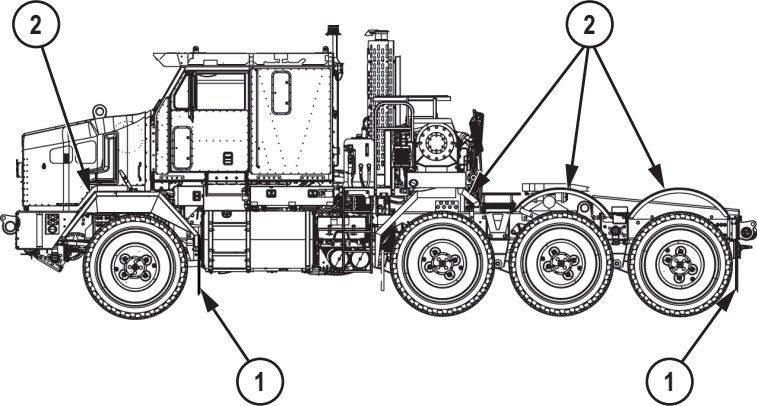
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				
			<p>d. Visually check rear of HET Tractor for obvious damage.</p> <p>e. Check that reverse alarm (3) is clear of mud or debris.</p>	<p>Any damage that would impair operation.</p>

Figure 1. HET Tractor Driver Side Mudflaps and Fenders.

Table 1. PMCS - BEFORE - Continued

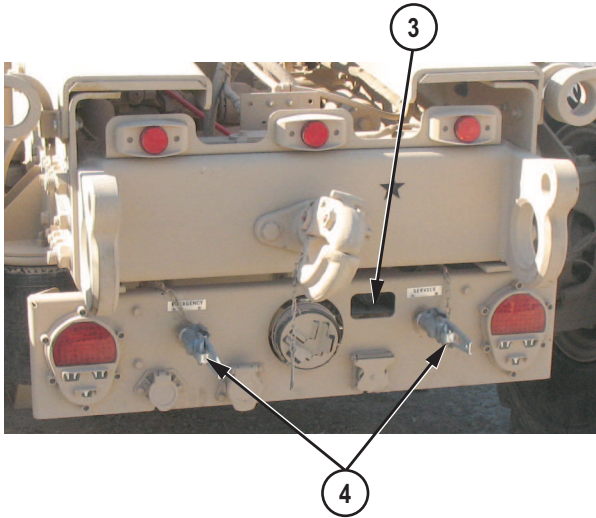
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
		<div></div>		
			<div><div>f. Check that gladhand dummy couplings (4) are in place.</div><div>g. Ensure HET Tractor is equipped with four wheel chocks.</div><div>h. Check passenger side mud flaps (5) and fenders (6) are present, intact, and all hardware is in place.</div></div>	Wheel chock(s) missing.

Table 1. PMCS - BEFORE - Continued

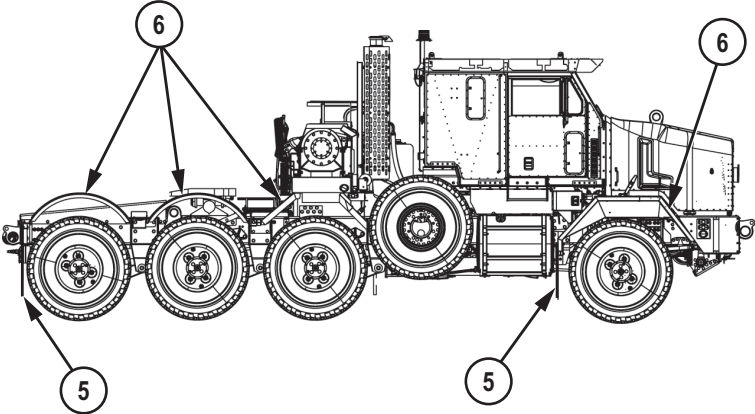
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				
			<p><b>NOTE</b></p> <p>Opening the hood is not required for this check, use the inspection window incorporated in the rubber skirt around bottom of hood.</p> <p>i. Check coolant overflow tank (7) for proper coolant level. Contact field level maintenance if coolant level is below COLD line (8) on coolant overflow tank (7).</p>	<p>Coolant level is below COLD line on overflow tank.</p>

Figure 3. HET Tractor Passenger Side Mudflaps and Fenders.

Table 1. PMCS - BEFORE - Continued

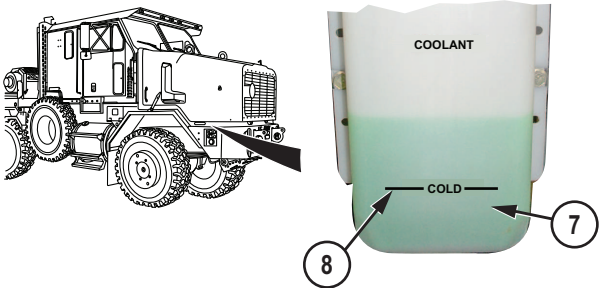
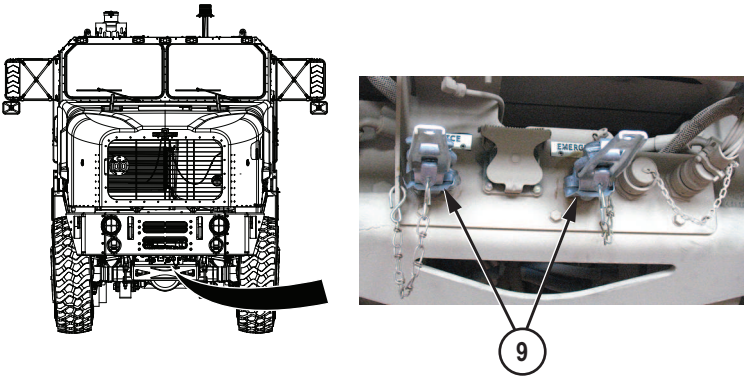
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<div></div>	
			<p>j. Visually check front of HET Tractor for obvious damage.</p>	Any damage that would impair operation.
			<div></div>	
			<p>k. Check that gladhand dummy couplings (9) are in place.</p>	

Table 1. PMCS - BEFORE - Continued

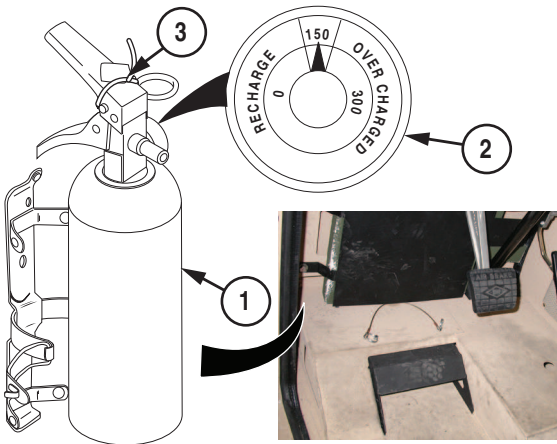
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
2	Before	Cab	1. Check for missing or damaged fire extinguisher (1) under dashboard on driver side:	
<div></div>				
			<div><div>a. Check that mounting is secure.</div><div>b. Check gauge (2) for proper pressure reading in green range of dial (about 150 psi (1 034 kPa) ).</div><div>c. Check for damaged or missing seal (3).</div></div>	Fire extin- guisher is missing or damaged, pressure

Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p><b>WARNING</b></p> <p>Ensure proper inspection and maintenance procedures of seat belt systems are adhered to. Failure to comply may result in serious injury or death to personnel.</p> <p><b>NOTE</b></p> <p>2. Check seat belts:</p> <p>a. Check seat belt strap webbing (4) for cuts, fraying, tears, excessive wear, etc.</p>	<p>gauge needle is in RE-CHARGE area, or seal is damaged or missing.</p> <p>Webbing is cut, frayed, torn, or excessively worn.</p>

Table 1. PMCS - BEFORE - Continued

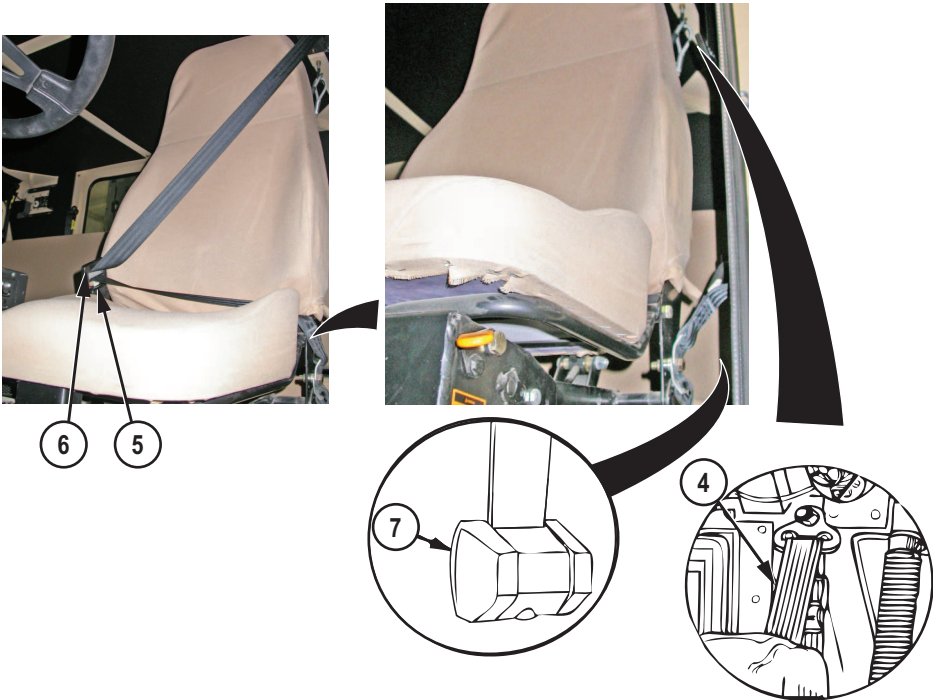
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<div></div>	
			b. Check latch (5) and buckle (6) for proper operation, wear, deformation, damage, and broken casing.	Buckle/ latch does not engage with a solid-sounding "click" and/ or does not release freely when button is pushed. Molded

Figure 7. Seat Belt Inspection.



Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<div>c. Check that all seat belt retractors (7) are not locked up and pay out/reel in webbing straps properly.</div> <div>3. Check operation of driver's seat adjustment controls. (WP 0030)</div>	<div>plastic around buckle/latch is de-formed, cracked, or broken.</div> <div>Retractor(s) do not operate properly, or retractor cover(s) are cracked/ broken.</div> <div>Adjustment controls broken or missing.</div>

Table 1. PMCS - BEFORE - Continued

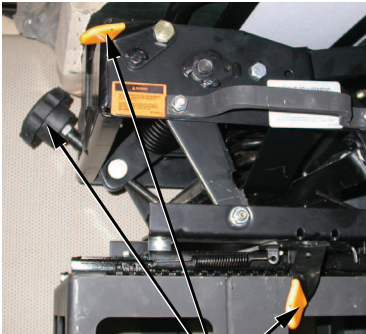
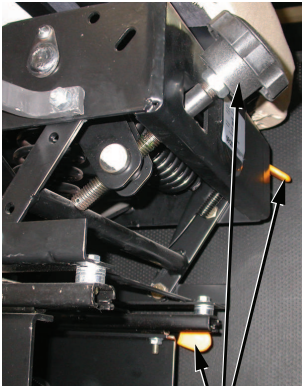
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div><div><p>DRIVER SIDE SEAT ADJUSTMENT CONTROLS</p></div><div><p>PASSENGER SIDE SEAT ADJUSTMENT CONTROLS</p></div></div> <p>Figure 8. Seat Adjustment Controls.</p>				
			<div><div>4. Check operation of passenger's seat adjustment controls. (WP 0032)</div></div>	Seat adjustment controls broken or missing.
3	Before	Engine/Main Instrument Panel	<div><div><b>NOTE</b></div><div>Ensure battery disconnect switch is in ON position before performing the following steps.</div><div>1. Check the instruments listed below for damage, operation, and condition:</div></div>	

Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			a. Push IGNITION/ ENGINE STOP switch (WP 0045) (1) up to on position. Instrument panel lights illuminate and go out after approximately 6 seconds.	Instrument panel lights do not go out and/or gauge(s) indicate abnormal reading.

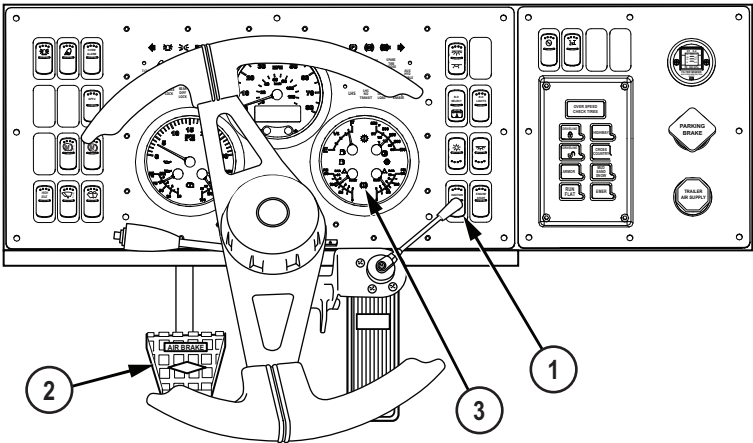


Figure 9. Main Instrument Panel.

Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p><b>NOTE</b></p> <ul style="list-style-type: none"><li>• Complete all start engine procedures, and comply with all notes, cautions, and warnings in that procedure before completing the PMCS checks below.</li><li>• Sound of air dryer discharge is normal.</li></ul> <p>2. Start engine: (WP 0045)</p> <p>a. Repeatedly step on service brake pedal (2) until air pressure drops below 60 psi (4.1 bar). Check that brake system failure (low air pressure) indicator (3) illuminates (red) and warning buzzer operates below 60 psi (4.1 bar).</p> <p>b. Allow air system pressure to build to approximately 120 psi (8.3 bar).</p>	<p>Engine fails to start.</p> <p>Low air pressure indicator fails to illuminate (red) or warning alarm fails to sound when pressure drops below 60 psi (4.1 bar).</p>

Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>c. Listen for air dryer discharge at 120 psi (8.3 bar).</p> <p>3. Check for excessive smoke, unusual noise, rough running and misfiring.</p> <p>4. Check tachometer (4) for correct idle of 700 rpm.</p>	<p>Tachometer indicates less than 500 rpm or more than 800 rpm.</p>

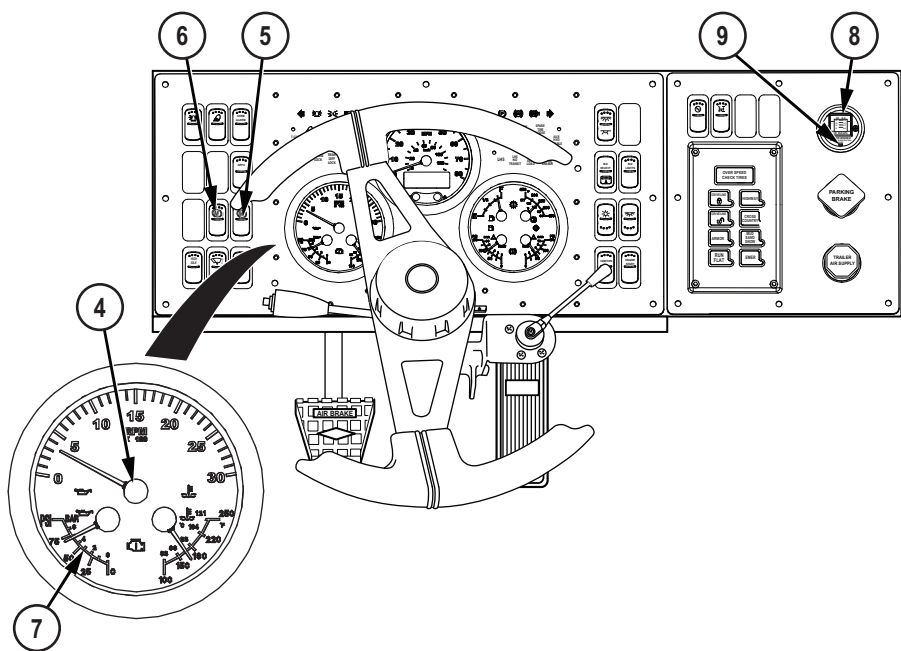


Figure 10. Main Instrument Panel.

**Table 1. PMCS - BEFORE - Continued**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>5. Use engine brake ON/OFF switch (5) and engine brake high/medium/low switch (6) to check operation of engine brake in all three positions (high, medium, and low). (WP 0046)</p> <p>6. Check engine oil pressure gauge (7) for normal operating range of 50 to 70 psi (3.5 to 4.8 bar) between engine speeds of 1800 to 2300 rpm. Minimum for safe operation is 30 psi (2.1 bar). At idle, oil pressure can go as low as 5 psi (.34 bar).</p> <p>7. Check AIR FILTER RESTRICTION indicator (8). Press RESET button (9) if indicator reads greater than 22 in. of water (5.5 kPa) (reading in red area). Notify field level maintenance if indicator still reads greater than 22 in. of water (5.5 kPa).</p>	<p>Engine brake is in-operative.</p> <p>Engine oil pressure gauge indicates less than 30 psi (2.1 bar) during normal operation or less than 5 psi (.34 bar) at idle and check engine indicator illuminates (red)/alarm sounds.</p> <p>AIR FILTER RESTRICTION indicator reads in red area and will not reset.</p>

Table 1. PMCS - BEFORE - Continued

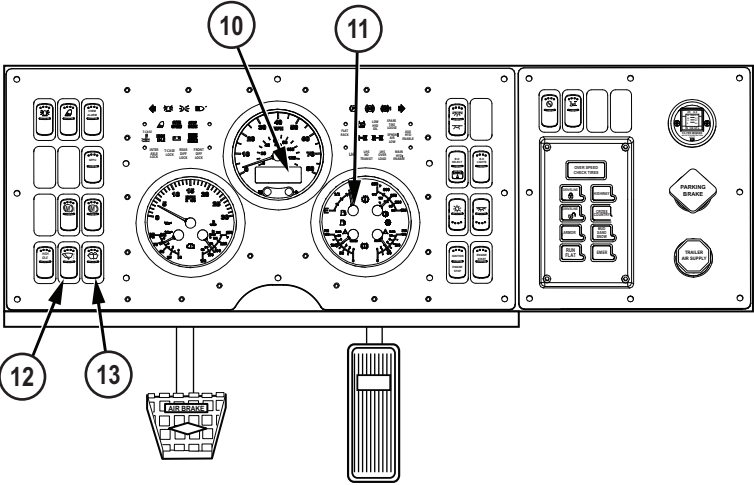
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			8. Check upper right corner of Liquid Crystal Display (LCD) message center (10) for battery voltage of 26 to 30.	Message center indicates below 26 or above 30.
				
			9. Ensure fuel gauge (11) operates.	
			<b>NOTE</b> Operation of HET Tractor with malfunctioning windshield wiper may violate AR 385-10.	
			10. Check windshield wiper switch (12) operation. (WP 0053)	Windshield wiper switch does not function.

Figure 11. Main Instrument Panel.

Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>11. Check windshield washer switch (13) operation. (WP 0053)</p> <p>12. Check city horn and country horn operation.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"><li>• Engine must be running to perform this check.</li><li>• Do not hold steering wheel at full right or full left position for more than 10 seconds: steering system can overheat.</li></ul> <p>13. Check HET Tractor steering for proper operation:</p> <p>a. Turn steering wheel from full left to full right, back to full left.</p>	<p>Windshield washer switch does not function.</p> <p>Steering in-operable or binds.</p>



**Table 1. PMCS - BEFORE - Continued**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	Before	Lights	<p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>• Operation of vehicle with inoperative service or emergency lights may violate AR 385-10.</li> <li>• An assistant may be used to check lights outside of cab.</li> </ul> <ol style="list-style-type: none"> <li>1. Operate switches in cab and check the following lights for broken and burned out lamps and broken or missing lenses:               <ol style="list-style-type: none"> <li>a. Headlights (WP 0043)</li> <li>b. Blackout drive light (WP 0044)</li> <li>c. Clearance lights (WP 0043)</li> <li>d. Turn signals/ Emergency flashers (WP 0041)</li> <li>e. Blackout marker lights (WP 0044)</li> <li>f. Stoplights (WP 0047)</li> </ol> </li> </ol>	Light(s) not functioning.

Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>g. Blackout stoplights (WP 0044)</p> <p>h. Reverse light/alarm (WP 0043)</p> <p>i. Beacon light (WP 0039)</p> <p>j. Work lights (WP 0039)</p> <p>2. Check reflectors for presence and damage.</p>	
5	Before	Environmental Controls	<p>1. Check cab/defrost vent control (1), recirculate/ fresh air control (2), and A/C control (3) for proper operation.</p>	

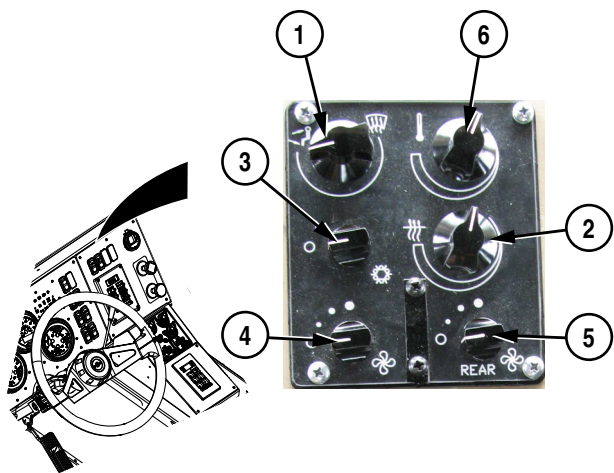


Figure 12. Cab Heat, Defrost, and A/C Controls.



Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
7	Before	Trailer Air Lines (Trailer Not Coupled)	<p><b>NOTE</b></p> <ul style="list-style-type: none"><li>Complete this procedure only if HET Tractor is NOT coupled to a trailer.</li><li>If HET Tractor is coupled to a trailer, skip to Item 9.</li></ul> <p>1. Check that service air line (1) is properly attached to dummy coupling (2).</p>	

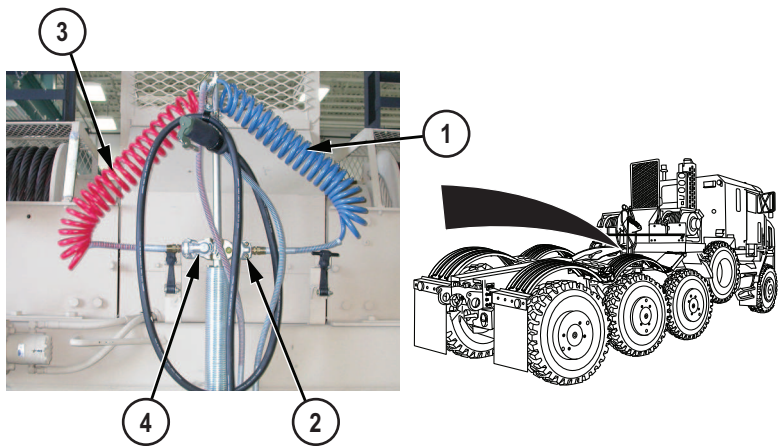


Figure 13. Service and Emergency Air Lines.

2. Check that emergency air line (3) is properly

**Table 1. PMCS - BEFORE - Continued**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>attached to dummy coupling (4).</p> <p>3. Check service air line (1) and emergency air line (3) for damage:</p> <p>a. Grasp area in center of coiled section in each hand (with four or five coils between hands), stretch air line 15 to 18 in. (38 to 46 cm) and look for cracks or breaks in air line.</p> <p>b. Repeat Step (a) until entire air line is inspected.</p> <p>4. Repeat Step (3) for remaining air line.</p>	Cracks or breaks present or cracking sound heard when stretching air line.
8	Before	Fifth Wheel (Trailer Not Coupled)	<p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>Complete this procedure only if HET Tractor is NOT coupled to a trailer.</li> </ul>	

Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<ul style="list-style-type: none"><li>If HET Tractor is coupled to a trailer, skip to Item 9.</li></ul> <ol style="list-style-type: none"><li>1. Check coupler jaws, primary lock release handle, secondary lock release handle, linkage, and locking plunger for damage and proper operation.</li></ol>	Coupler jaws are broken or mechanism is damaged or will not operate properly.

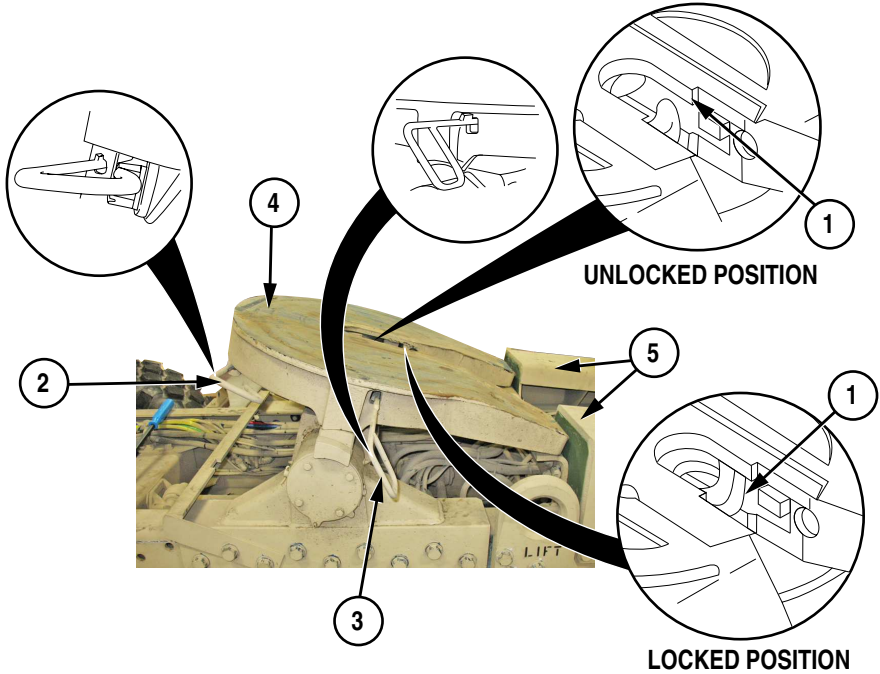


Figure 14. Fifth Wheel Checks.

**Table 1. PMCS - BEFORE - Continued**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<ol style="list-style-type: none"> <li>2. Check that coupler jaws (1) lock in open position:               <ol style="list-style-type: none"> <li>a. Pull out secondary lock release handle (3) and latch in position.</li> <li>b. Pull out primary lock release handle (2) twice.</li> <li>c. Put primary lock release handle (2) in locked position.</li> <li>d. Check that coupler jaws (1) stay open with primary lock release handle (2) locked.</li> </ol> </li> <li>3. Check that top surface of fifth wheel (4) and fifth wheel ramps (5) are properly and adequately lubricated with Grease, Automotive and Artillery (GAA). (WP 0124, Table 8)</li> </ol>	Coupler jaws will not stay open.
9	Before	Fifth Wheel (Trailer Coupled)	<p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>• Complete this procedure only if HET Tractor is coupled to a trailer.</li> </ul>	

Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<ul style="list-style-type: none"><li>If HET Tractor is NOT coupled to a trailer, skip to Item 11.</li></ul> <p>Check that primary lock release handle (1) and secondary lock release handle (2) are completely in.</p>	<p>Primary lock release handle and/or secondary lock release handle do not stay in.</p>

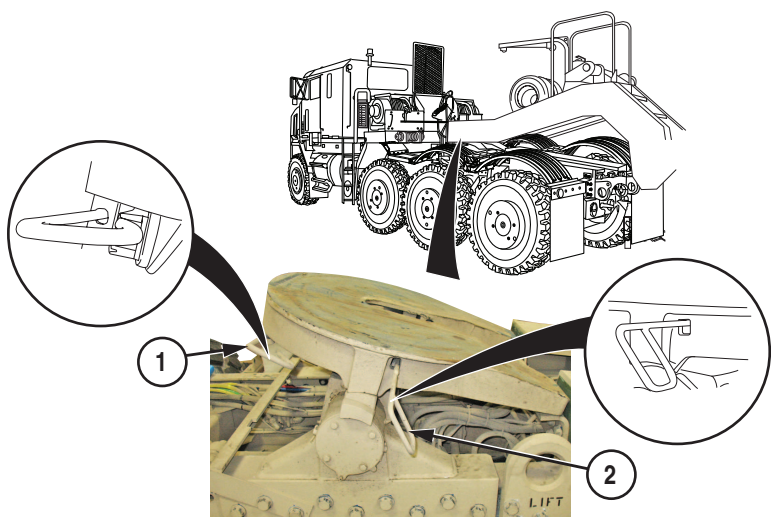


Figure 15. Fifth Wheel Lock Release Handles.



Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
10	Before	Trailer Air Lines and Intervehicular Cable (Trailer Coupled)	<p><b>NOTE</b></p> <ul style="list-style-type: none"><li>• Complete this procedure only if HET Tractor is coupled to a trailer.</li><li>• If HET Tractor is NOT coupled to a trailer, skip to Item 11.</li></ul> <p>1. Check that service coupling (1), intervehicular cable (2), and emergency coupling (3) are securely connected to trailer (4).</p>	Either air line or intervehicular cable cannot be connected to trailer.

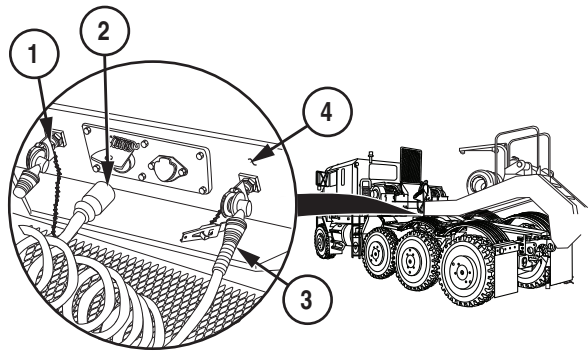


Figure 16. Trailer Air Lines and Intervehicular Cable.

Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p><b>NOTE</b></p> <p>Perform this test with the trailer empty and with the trailer loaded.</p> <ol style="list-style-type: none"><li>2. Check trailer air lines, relay valve, and air reservoirs for leaks.</li><li>3. Check trailer intervehicular cable for obvious damage.</li></ol>	<p>Any air leaks or damage present.</p> <p>Intervehic- lar cable is missing or unserviceable.</p>
11	Before	Brakes and Parking Brakes	<p><b>NOTE</b></p> <ul style="list-style-type: none"><li>• Engine must be running to perform this check.</li><li>• Perform the following check in an open area, away from personnel and obstructions.</li></ul> <ol style="list-style-type: none"><li>1. Start engine. (WP 0045)</li><li>2. Check service brakes by moving HET Tractor approximately 60 ft. (18.3 m) and steadily apply service brake pedal (WP 0047) (1). HET Tractor should</li></ol>	<p>Service brakes do not operate properly.</p>

Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>stop smoothly without noticeable side pull or vibration.</p> <p>3. With HET Tractor stopped and transmission range selector in D (Drive), release service brake pedal (WP 0047) (1). Service brakes should release immediately and allow HET Tractor to roll forward.</p>	<p>Service brakes do not operate properly.</p>

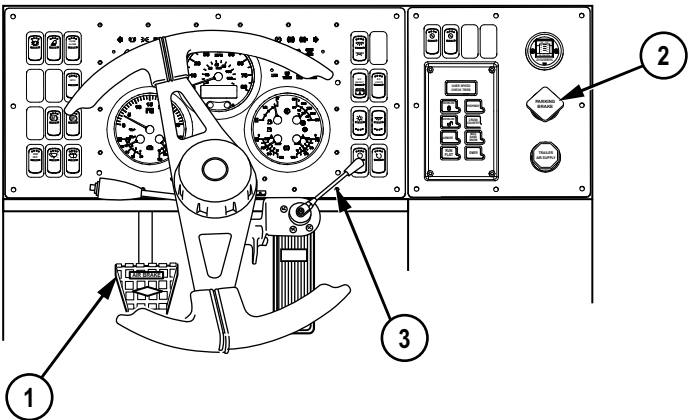


Figure 17. Service Brake, Trailer Brake, and Parking Brake Controls.

**CAUTION**

Complete parking brake check with engine at idle. Failure to comply may result in damage to equipment.

Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>4. Check parking brake while HET Tractor is still stopped; apply PARKING BRAKE control (WP 0049) (2) with transmission range selector still in D (Drive) and engine at idle. HET Tractor should not move.</p> <p><b>CAUTION</b></p> <p>Complete trailer brake check with engine at idle. Failure to comply may result in damage to equipment.</p> <p><b>NOTE</b></p> <p>Check trailer hand-brake control only if trailer is loaded and connected to HET Tractor.</p> <p>5. Check trailer brakes by applying trailer handbrake control (3) only, and attempt to move tractor/trailer combination. Do not apply service brake pedal (1). HET Tractor and trailer should not move.</p>	<p>HET Tractor moves with parking brake applied.</p> <p>Brakes fail to hold tractor/ trailer from moving.</p>

Table 1. PMCS - BEFORE - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p><b>NOTE</b></p> <p>Operator may continue on with mission if HET Tractor requires no servicing.</p> <p>6. Shut OFF engine (as required). (WP 0050)</p>	

END OF TASK

END OF WORK PACKAGE



OPERATOR MAINTENANCE  
DURING - PREVENTIVE MAINTENANCE

INITIAL SETUP:

Tools and Special Tools

Gloves, Leather (WP 0138, Table 2)

Table 1. PMCS - DURING

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	During	Instrument Panel	<p><b>NOTE</b></p> <p>During operation, all gauges should maintain the proper readings listed in the start engine procedures. (WP 0045)</p> <p>1. Monitor all gauges, indicators, and warning lights for proper reading and operation while operating vehicle:</p> <p>a. Check that engine speed is 625 to 725 rpm at idle.</p>	Gauges, indicators, and warning lights do not read/operate properly.

Table 1. PMCS - DURING - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p><b>NOTE</b></p> <ul style="list-style-type: none"><li>• Minimum engine oil pressure for safe operation (vehicle moving) is 30 psi (2 bar).</li><li>• At idle, engine oil pressure can drop as low as 5 psi (0.34 bar), this is a normal condition.</li></ul> <p>b. Check that engine oil pressure is between 40 to 70 psi (2.8 to 4.8 bar) at engine speed of 1800 to 2100 rpm.</p> <p>c. Check that transmission oil temperature is below 300°F (149°C).</p> <p>d. Check that coolant temperature is below 219°F (104°C). Normal coolant temperature range during operations is 180 to 200°F (82 to 93°C).</p>	



**Table 1. PMCS - DURING - Continued**

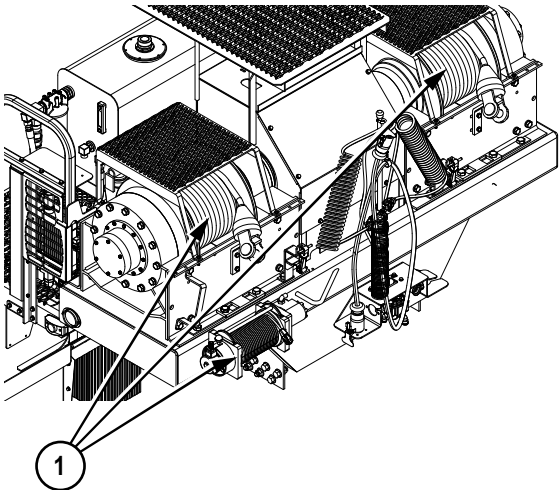
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p align="center"><b>NOTE</b></p> <p>Battery voltage read-out is located in top right corner of Liquid Crystal Display (LCD).</p> <p>e. Check that battery voltage is between 24 and 28 volts.</p> <p>2. Check that front and rear air system pressures are between 60 to 130 psi (4 to 9 bar).</p> <p>3. Check that AIR FILTER RESTRICTION indicator indicates in green range of scale (below 20 in. of water).</p>	
2	During	Engine	Check for unusual engine noise and rough running.	Unusual engine noise verified or engine runs rough.
3	During	Steering	<p>1. Check for any unusual steering noise, binding, or difficulty in turning during operation.</p> <p>2. Check for pulling or shimmying during operation.</p>	<p>Steering binds or is inoperable.</p> <p>HET Tractor pulls to left or right or shimmies excessively.</p>

Table 1. PMCS - DURING - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	During	Transmission	<div>1. Check transmission for proper operation in all ranges. (WP 0064)</div> <div><b>NOTE</b> At idle, transmission oil temperature gauge may indicate 0 to 160°F (-18 to 71°C) oil temperature.</div> <div>2. Check transmission oil temperature gauge (1) for normal operating temperature of less than 220°F (104°C).</div>	<div>Any gear range does not work.</div> <div>Transmission oil temperature gauge indicates in red area (approximately 300°F (149°C) or more).</div>
5	During	Service Brakes	Be alert for chatter, noise, and side pull.	Service brakes do not operate properly.
6	During	Winches	<div><b>NOTE</b> Winch checks are performed during recovery operations.</div> <div>1. Check winch controls for proper operation. (WP 0058)</div> <div><b>WARNING</b> Wear leather gloves when checking winch cable. Failure to comply may result in seri-</div>	Winch controls inoperable.

Table 1. PMCS - DURING - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>ous injury or death to personnel.</p> <p>2. Check winch cables (1) for kinks, frays, and breaks.</p>	<p>Winch cable kinked, frayed, or broken.</p>



The diagram shows a detailed view of a mechanical winch assembly. It includes a central drum for winding cable, various pulleys, and structural supports. A callout circle containing the number '1' has two lines pointing to the winch cable, one at the drum and one further along the cable's path.

Figure 1. Winch Cables.

END OF TASK

END OF WORK PACKAGE



OPERATOR MAINTENANCE  
AFTER - PREVENTIVE MAINTENANCE

INITIAL SETUP:

Tools and Special Tools

Gloves, Leather (WP 0138, Table 2)

References

AR 385-10 (WP 0136)

Table 1. PMCS - AFTER

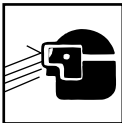
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p><b>WARNING</b></p> <p>Do not start engine or move Heavy Equipment Transporter (HET) Tractor when anyone is under HET Tractor or working on brake lines. Failure to comply may result in serious injury or death to personnel.</p> <p><b>WARNING</b></p>  <p>Ensure engine is OFF and eye protection is worn when checking for leaks. Failure to comply may result in serious injury or death to personnel.</p>	

Table 1. PMCS - AFTER - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p><b>NOTE</b></p> <ul style="list-style-type: none"><li>• Perform Operator's Before, After, and Weekly PMCS checks if:</li><li>• You are the assigned driver but have not operated the HET Tractor since the last weekly inspection.</li><li>• You are operating the HET Tractor for the first time.</li><li>• Clean all lubrication points with solvent cleaning compound and allow to dry prior to servicing.</li><li>• When using a grease gun, apply lubricant to the fitting until clean lubricant is squeezed out of the part being lubricated.</li></ul>	

*Table 1. PMCS - AFTER - Continued*

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<ul style="list-style-type: none"> <li>Always refer to lubrication instructions to ensure equipment has correct lubricants appropriate to the operating environment (expected continuous temperatures). If not, remove/drain and reapply/refill equipment with appropriate lubricants for operating environment as prescribed in Lubrication Instructions. (WP 0124)</li> </ul>	
1	After	Transmission Oil Level	<p><b>WARNING</b></p> <p>Parking brake must be set before checking transmission fluid. Failure to comply may result in serious injury or death to personnel.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>Perform the following check with engine running and transmission in N (neutral).</li> </ul>	

Table 1. PMCS - AFTER - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<ul style="list-style-type: none"><li>If transmission temperature is below 160°F (71°C), oil level should be within COLD area marked on transmission oil dipstick.</li><li>If transmission oil temperature is above 160°F (71°C), oil level should be within HOT area marked on transmission oil dipstick.</li></ul> <ol style="list-style-type: none"><li>Check transmission oil level on dipstick (1). Add transmission oil if oil level is too low.</li></ol>	Overfull, notify field level maintenance.



Table 1. PMCS - AFTER - Continued

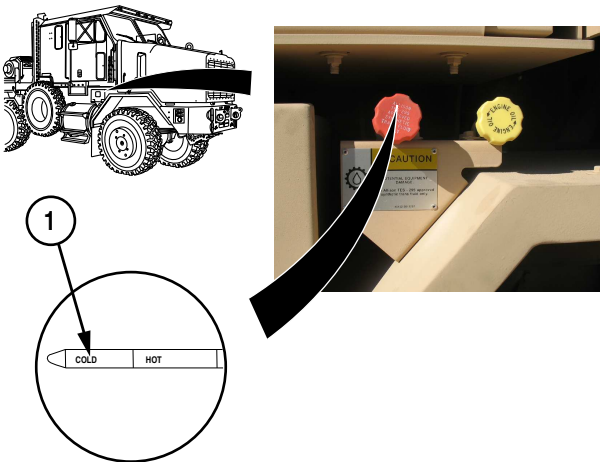

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div></div> <p>Figure 1. Transmission Oil Dipstick.</p>				
			2. Shut Off engine. (WP 0050)	
2	After	Driver Side and Passenger Side Wheels	<p><b>WARNING</b></p>  <p>Planetary hubs get hot enough to burn. Use caution when checking hubs. Failure to comply may result in serious injury or death to personnel.</p> <p>1. Check planetary hubs by feeling for warmth.</p>	One or more hubs noticeably

Table 1. PMCS - AFTER - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p><b>NOTE</b></p> <p>It is not necessary to remove wheel covers to perform the following check.</p> <p>2. Check wheels for broken, cracked, and bent surfaces.</p>	<p>warmer than the others.</p> <p>Wheel is broken, cracked, or bent.</p>
3	After	Suspension	<p>1. Check shock absorbers for obvious damage, leaks, and missing or loose hardware.</p> <p>2. Check air springs (bags) (1) for obvious damage, air leaks, and missing or loose hardware.</p>	<p>Leaks or any hardware is missing, loose, or broken.</p> <p>Air leaks or any hardware is missing, loose, or broken.</p>

Table 1. PMCS - AFTER - Continued


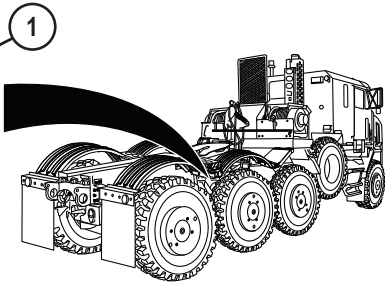
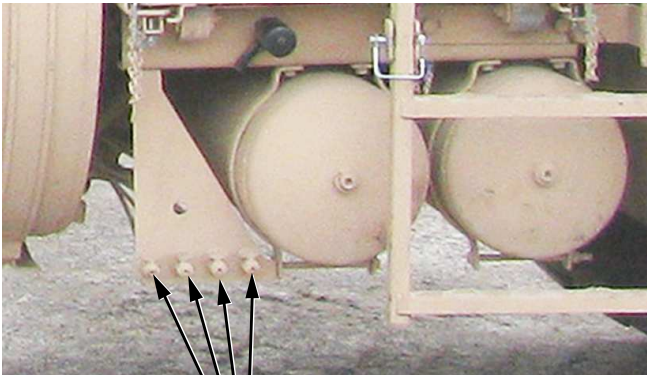


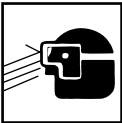
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div>  </div> <div>  </div> <p>Figure 2. Rear Air Springs (Bags).</p>				
4	After	Air Reservoirs	1. Drain air reservoirs (WP 0133) until no water comes out of reservoir drain valves.	

Table 1. PMCS - AFTER - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div><p>AIR RESERVOIR DRAINS</p><p>Figure 3. Air Reservoir Drain Valves.</p></div>				
5	After	Fuel Filter	<div><p><b>WARNING</b></p><div></div><p>Fuel is very flammable and can explode easily. Keep fuel away from open fire and keep fire extinguisher within easy reach when working with</p></div>	

*Table 1. PMCS - AFTER - Continued*

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>fuel. Do not work on fuel system when engine is hot. Fuel can be ignited when engine is hot. When working with fuel, wear proper eye protection and rubber gloves. Post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE. Failure to comply may result in serious injury or death to personnel.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>• Drain fuel in suitable container.</li> <li>• Operation of vehicle with malfunctioning fuel filter may violate (WP 0136)</li> </ul> <p>1. Check fuel filter for leaks or damage.</p>	<p>Any fuel leak is evident.</p>

Table 1. PMCS - AFTER - Continued

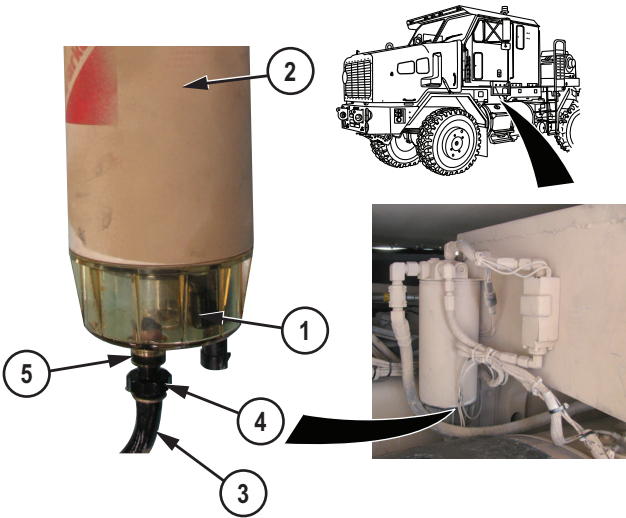
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
		<div></div>		
			<p><b>NOTE</b></p> <p>A dirty or partially clogged fuel filter can cause the engine to lose power. If this happens, contact field level maintenance.</p> <p>2. Check for water in bowl (1) of fuel filter (2). If water is found, place container under drain hose (3) and turn nut (4) counterclockwise to open contaminant drain valve (5).</p>	

Table 1. PMCS - AFTER - Continued

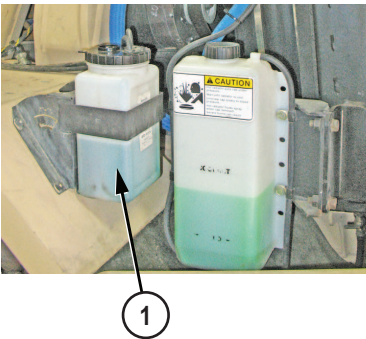
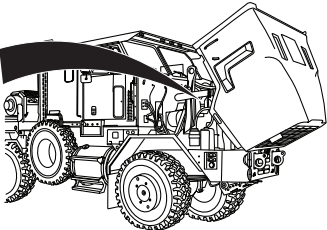
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			3. Drain fuel filter (2) until all water is removed. Turn nut (4) clockwise to close contaminant drain valve (5).	
6	After	Windshield Washer Fluid	1. Check windshield washer fluid tank (1) for sufficient fluid to complete next mission.	
<div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p style="text-align: center;">Figure 5. Windshield Washer Fluid Tank.</p>				
7	After	Mirrors	<p><b>NOTE</b></p> <p>Operation of vehicle with broken/missing mirrors may violate (WP 0136)</p> <p>Check condition of mirrors.</p>	Mirror(s) broken or missing.

Table 1. PMCS - AFTER - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
8	After	Engine Oil	<p><b>CAUTION</b></p> <ul style="list-style-type: none"><li>Dipstick must be inserted all the way into tube to ensure proper reading. Failure to comply may result in damage to equipment.</li><li>Engine oil level must not drop below the ADD mark. Failure to comply may result in damage to engine.</li></ul> <p><b>NOTE</b></p> <p>Allow at least 15 minutes to elapse after engine shutdown before checking oil.</p> <ol style="list-style-type: none"><li>Check engine oil level on dipstick (1). Proper oil level is between ADD mark and FULL mark.</li></ol>	



Table 1. PMCS - AFTER - Continued

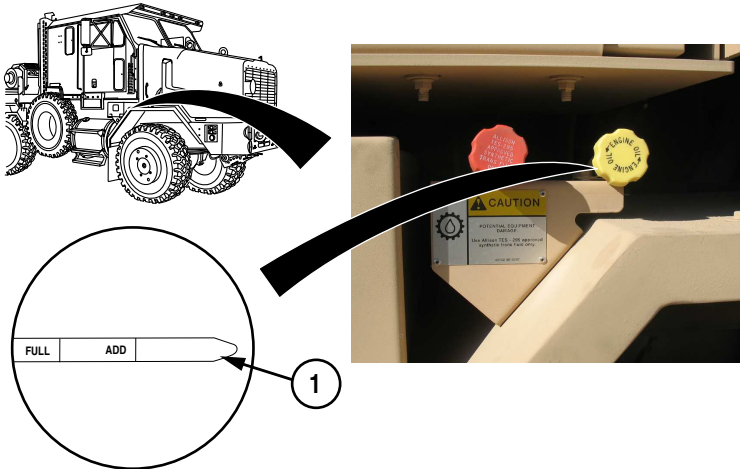


ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div></div>				
			2. Add OE/HDO if engine oil level is at or below ADD mark.	Overfull, notify field level maintenance.
9	After	Hydraulic Fluid Reservoir	<div><p><b>WARNING</b></p><div></div><p>Prolonged contact with lubricating oil may cause skin rash. Remove saturated clothing and immediately wash skin and clothing that come in contact with lubricating oil</p></div>	

Table 1. PMCS - AFTER - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>thoroughly. Keep area well-ventilated to keep fumes at a minimum. Failure to comply may result in serious injury or death to personnel.</p> <p><b>CAUTION</b></p> <p>Do not fill hydraulic reservoir past FULL mark. Failure to comply may result in damage to equipment.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"><li>Hydraulic oil expands when heated, which may give the operator false (high) fluid level readings if vehicle has been recently operated.</li><li>If possible, wait until hydraulic reservoir is completely cooled down (minimum of 2 hours) prior to adding hydraulic oil, otherwise fill reservoir to FULL mark.</li></ul>	

Table 1. PMCS - AFTER - Continued

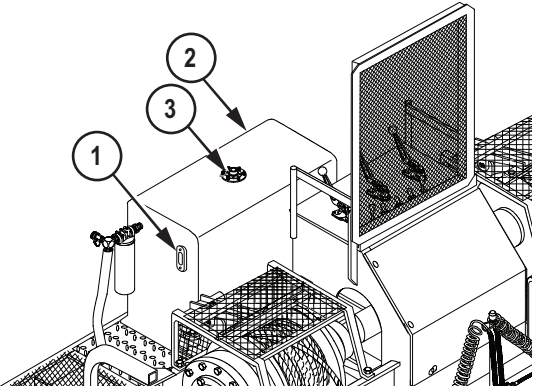
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>1. Check that hydraulic oil level in sight glass (1) on hydraulic oil reservoir (2) is at FULL mark (may be above mark if vehicle has been recently operated). If low, add hydraulic oil (WP 0124, Table 4) to FULL mark:</p>	
				
			<p>Figure 7. Hydraulic Reservoir.</p>	
			<p>a. Remove cap (3) from hydraulic reservoir (2).</p> <p>b. Fill hydraulic reservoir (2) with hydraulic oil (WP 0124, Table 4) until sight glass (1) reads at FULL mark.</p>	

Table 1. PMCS - AFTER - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			c. Install cap (3) on hydraulic reservoir (2). Check appearance of hydraulic oil in sight glass (1). Ensure hydraulic oil is clear and not milky or foamy.	Hydraulic oil appears milky or foamy.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE  
WEEKLY - PREVENTIVE MAINTENANCE

INITIAL SETUP:

Tools and Special Tools

Gloves, Leather (WP 0138, Table 2)  
Ladder (WP 0137, Table 3, Item 28)

Tools and Special Tools (cont.)

Socket, 1 1/2 in. (WP 0137, Table 3, Item 39)  
Handle, Sliding, 3/4 in. Square Drive (WP 0137, Table 3, Item 24)

Table 1. PMCS - WEEKLY

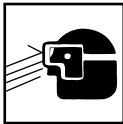
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p><b>WARNING</b></p> <p>Do not start engine or move Heavy Equipment Transporter (HET) Tractor when anyone is under HET Tractor or working on brake lines. Failure to comply may result in serious injury or death to personnel.</p> <p><b>WARNING</b></p> <div></div> <p>Ensure engine is OFF and eye protection is worn when checking for leaks. Failure to comply may result in</p>	

Table 1. PMCS - WEEKLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>serious injury or death to personnel.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"><li>• Perform Operator's Before, After, and Weekly PMCS checks if:</li><li>• You are the assigned driver but have not operated the HET Tractor since the last weekly inspection.</li><li>• You are operating the HET Tractor for the first time.</li><li>• Clean all lubrication points with solvent cleaning compound and allow to dry prior to servicing.</li><li>• When using a grease gun, apply lubricant to the fitting until clean lubricant is squeezed out of the part being lubricated.</li></ul>	

**Table 1. PMCS - WEEKLY - Continued**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<ul style="list-style-type: none"> <li>• Always refer to lubrication instructions to ensure equipment has correct lubricants appropriate to the operating environment (expected continuous temperatures). If not, remove/drain and reapply/refill equipment with appropriate lubricants for operating environment as prescribed in Lubrication Instructions. (WP 0124)</li> <li>• Check all data plates for legibility as you are performing PMCS checks.</li> <li>• Use personnel ladder (WP 0055) as required to perform PMCS checks.</li> </ul>	
1	Weekly	Engine Compartment (driver side)	1. Open hood. (WP 0129)	

Table 1. PMCS - WEEKLY - Continued

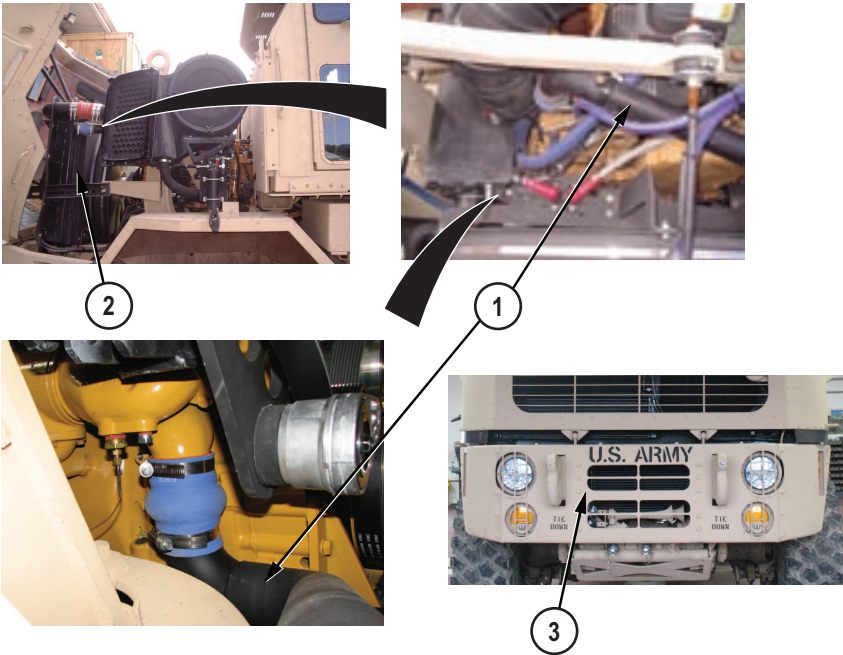
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<div>2. Check entire area for loose or missing hardware, wires, connectors, hoses, and air lines.</div> <div>3. Check radiator hoses (1) for rotting, leakage, and loose clamps.</div>	<div>Any Class III leakage evident.</div>
<div></div>				
			<div>4. Check radiator (2) for leaks, damaged fins, and missing baffles.</div>	<div>Any Class III leakage evident.</div>

Figure 1. Engine Compartment (Driver Side).



Table 1. PMCS - WEEKLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<div>5. Check transmission oil cooler (3), hoses, and fittings for cracks or leaks. If leaks are found, contact field maintenance.</div> <div>6. Check transmission oil cooler (3) for dirt and debris clogging cooling fins. Clean if clogged.</div> <div>7. Check fan clutch (4) for leaks and missing or loose mounting hardware.</div>	<div>Any Class III leakage evident.</div> <div>Leakage is evident or missing or loose mounting hardware is found.</div>

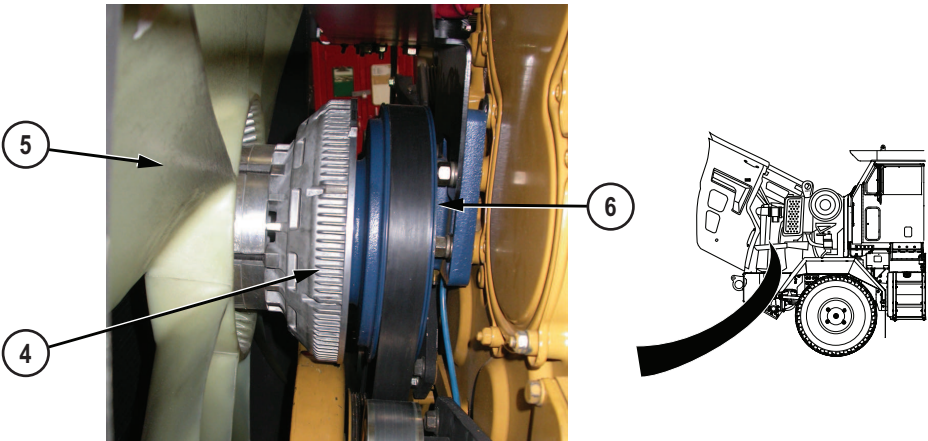


Figure 2. Fan Clutch.

Table 1. PMCS - WEEKLY - Continued


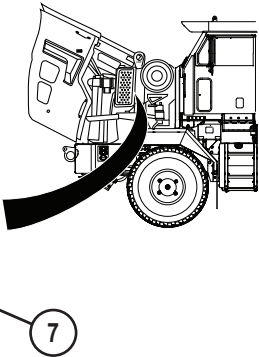
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<div>8. Check fan (5) and pulleys (6) for cracks and damage.</div> <div>9. Check air compressor (7) for loose screws, damaged mounting flange and air lines, and loose fittings/connections.</div>	<div>Fan or any pulley is cracked or damaged.</div> <div>Loose hardware, damage or loose fittings/connections found.</div>
<div><div></div><div></div></div>				
			<div>10. Check air intake hose assembly for loose clamps (8) and damaged air intake hose (9). If clamps (8) are loose, contact field level maintenance to tighten.</div>	<div>Any air intake hose has a hole or is torn.</div>

Figure 3. Air Compressor.

Table 1. PMCS - WEEKLY - Continued

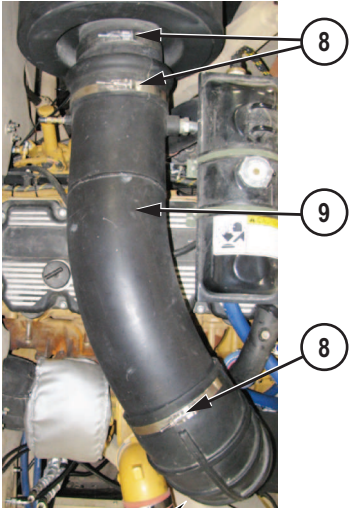
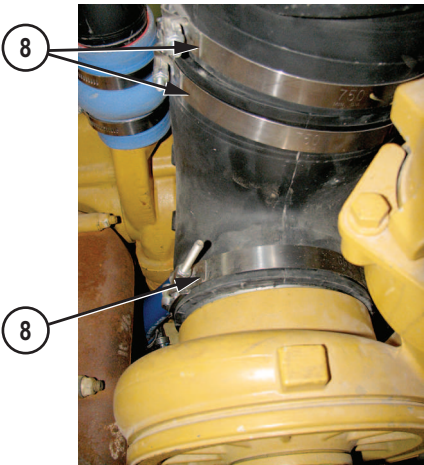
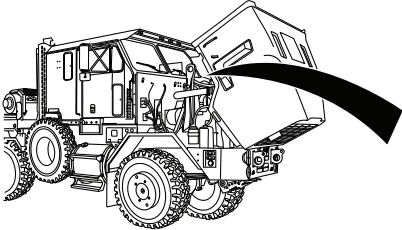
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div></div>				
			<div>11. Check air cleaner housing for loose hand knobs. Tighten as needed.</div> <div>12. Check air conditioning system receiver/dryer sight glass for foaming, oil streaking, or cloudiness:</div>	

Figure 4. Air Intake Hose Assembly.

Table 1. PMCS - WEEKLY - Continued


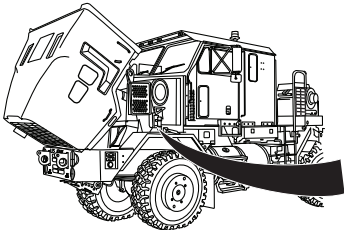
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<div><div>a. Start engine. (WP 0045)</div><div>b. Turn on air conditioner. (WP 0054)</div><div>c. Check receiver/dryer sight glass (10).</div></div>	<div>Foaming, oil streaking, or cloudiness appears in sight glass. Contact field level maintenance.</div>
		<div></div>	<div>d. Turn air conditioner OFF. (WP 0054)</div>	

Figure 5. Receiver/Dryer Sight Glass.

Table 1. PMCS - WEEKLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			e. Shut OFF engine. (WP 0050)	
2	Weekly	Tool Box and Stowage Box	1. Check inside tool box (1) and stowage box (2) for torn or damaged seals (3), water in bottom, or other obvious damage. If damage is present or water is found in box, notify field level maintenance.	

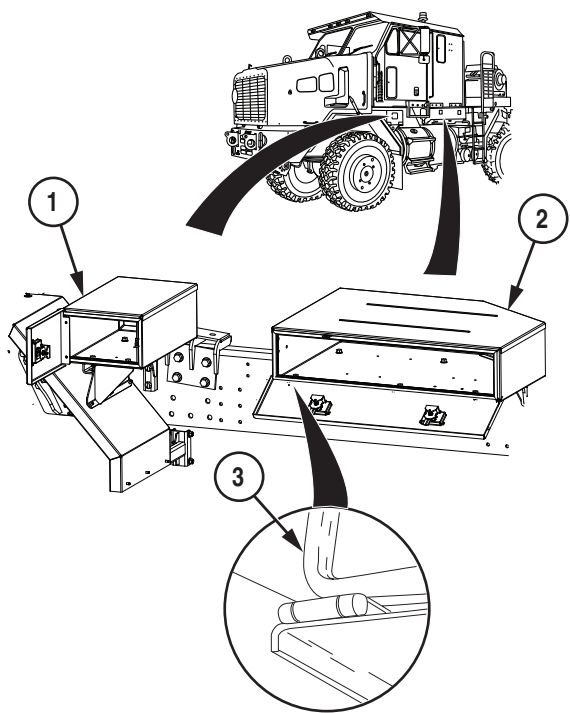


Figure 6. Tool Box and Stowage Box.

Table 1. PMCS - WEEKLY - Continued



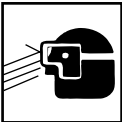
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<div>2. Check tool box (1) and stowage box (2) for missing hardware.</div> <div>3. Check that tool box (1) and stowage box (2) locks move/operate freely.</div> <div>4. Check that tool box (1) and stowage box (2) door hinges move freely.</div>	
3	Weekly	Driver Side Fuel Tank	<div><div>WARNING</div><div></div><div>Fuel is very flammable and can explode easily. Keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited when engine is hot. When working with fuel, wear proper eye protection and rubber</div></div>	

Table 1. PMCS - WEEKLY - Continued

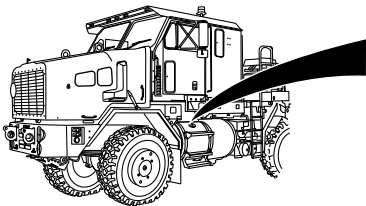
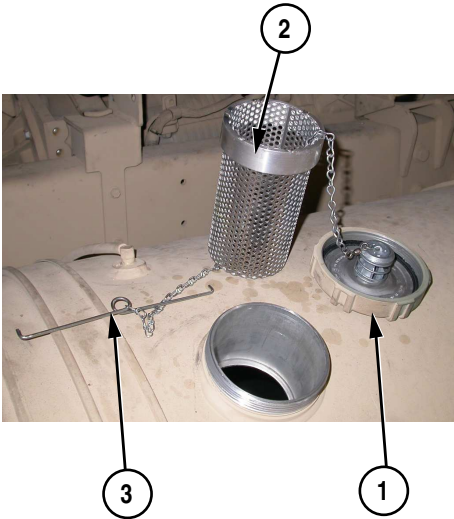
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>gloves. Post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE. Failure to comply may result in serious injury or death to personnel.</p> <p>1. Check fuel filler cap (1) for dirt and wipe clean if necessary.</p>	
				
			<p>a. Remove fuel filler cap (1). Check rubber seal inside fuel filler cap (1) for damage.</p>	

Figure 7. Fuel Tank (Driver Side).

Table 1. PMCS - WEEKLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<div>b. Pull strainer (2) from fuel tank and release retaining wire (3). Clean with dry rag.</div> <div>2. Check fuel tank, fuel hoses, and connections for leaks and/or damage. Ensure all connections are secure.</div> <div>3. Check ether starting aid (4) for loose or damaged mounts and hardware. Check canister for damage.</div>	Any leak-age of fuel.

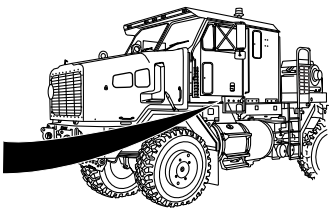
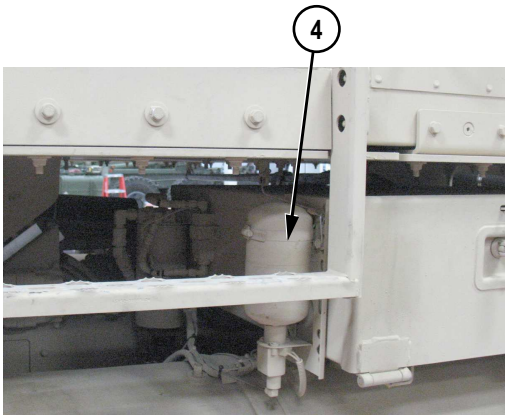


Figure 8. Ether Starting Aid.



*Table 1. PMCS - WEEKLY - Continued*

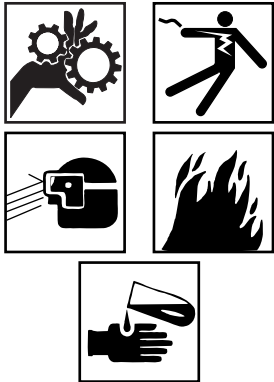
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	Weekly	Batteries	<p><b>WARNING</b></p>  <p>Use extreme care not to short out battery terminals. Remove all jewelry such as rings, ID tags, bracelets, etc., prior to working on or around Heavy Equipment Transporter (HET) Tractor. Jewelry and tools can catch on equipment, contact positive electrical circuits, and cause a direct short, severe burns, or electrical shock. Do not smoke or use open flame around batteries. Batteries may explode from a spark. Battery acid is harmful to skin and eyes. Gloves, eye protection, and proper clothing should be worn</p>	

Table 1. PMCS - WEEKLY - Continued

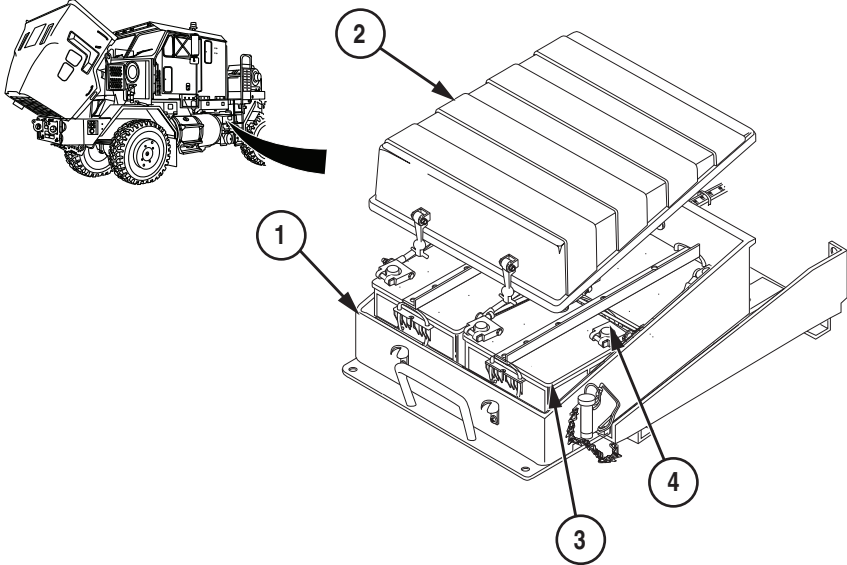
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>when working with batteries. Failure to comply may result in serious injury or death to personnel. For first aid procedures, refer to FM 4-25.11.</p> <p>1. Open battery box (WP 0130) (1).</p>	
				
			<p>2. Check battery box (1) and cover (2) for damage.</p> <p>3. Inspect batteries (3) for cracks or leaks and</p>	Battery is damaged, terminals

Figure 9. Inspect Batteries and Battery Box.

Table 1. PMCS - WEEKLY - Continued


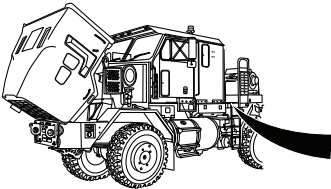
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			broken, loose, or burned terminal posts (4).  4. Check condition of slave receptacle (5).	are broken or burned, any terminal, cable, is loose or damaged.  Slave receptacle damaged.
<div></div> <p><i>Figure 10. Slave Receptacle.</i></p>				
5	Weekly	Driver Side Tire Assembly	1. Remove four nuts (1) and wheel cover (2) from each wheel.	

Table 1. PMCS - WEEKLY - Continued

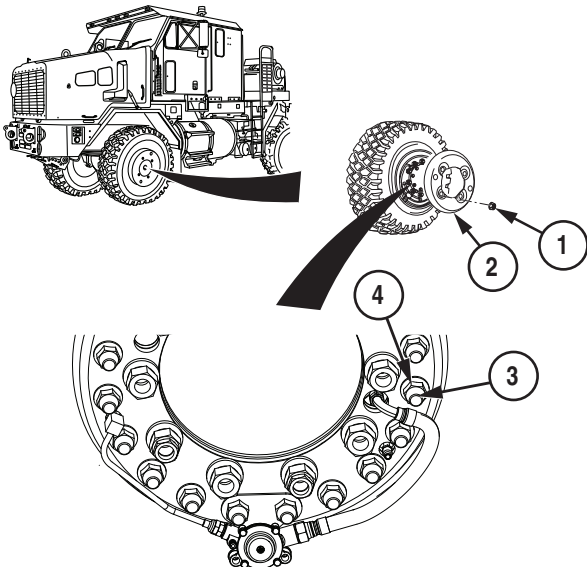
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div></div> <p><i>Figure 11. Driver Side Tire Assembly.</i></p>				
			<div><div>2. Check wheel covers (2) for damage.</div><div>3. Check wheel studs (3) and nuts (4) for obvious looseness. Check for bent or broken studs and missing or loose nuts.</div><div>4. Install wheel cover (2) and four nuts (1) on each wheel.</div></div>	Any hub has two or more nuts or studs missing, broken or bent.
6	Weekly	Hydraulic Oil Cooler/	1. Check hydraulic oil cooler (1), fittings (2), and hoses (3) for	Any damage that would im-

Table 1. PMCS - WEEKLY - Continued

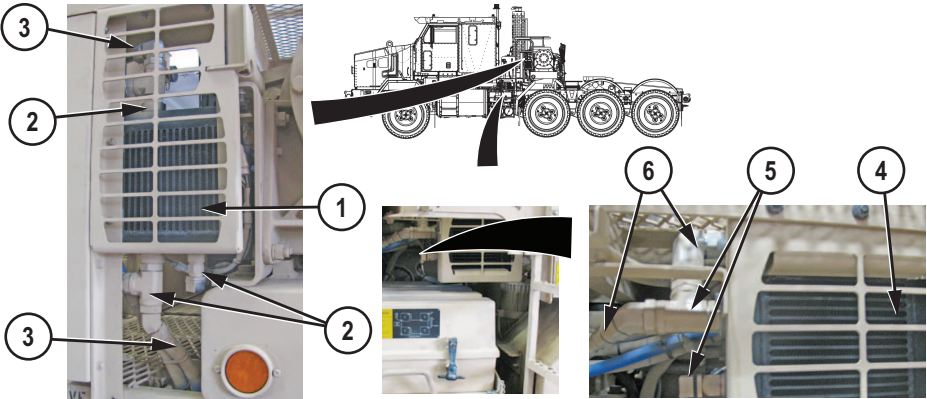
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
		Transfer Case Oil Cooler	cracks, leaks, or damage.	pair operation or any Class III leak.
<div></div>				
			<div><div>2. Check transfer case oil cooler (4), fittings (5), and hoses (6) for cracks, leaks, or damage.</div><div>3. Check hydraulic oil cooler (1) and transfer case oil cooler (4) for dirt and debris clogging cooling fins. Remove dirt and debris as necessary.</div></div>	Any damage that would impair operation or any Class III leak

Table 1. PMCS - WEEKLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
7	Weekly	Winches	<p><b>NOTE</b></p> <p>Driver side and passenger side main winch hardware is the same. Driver side shown.</p> <p>1. Check driver side and passenger side main winches for missing or damaged clevis pins (1).</p>	Missing or damaged clevis pins.
			2. Check auxiliary winch for missing or damaged	Missing or damaged pin(s).

Figure 13. Winch Checks.

*Table 1. PMCS - WEEKLY - Continued*

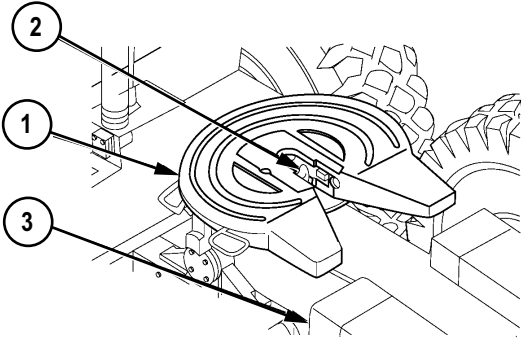
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			pin (2) and/or snap pin (3).	
8	Weekly	Fifth Wheel	<p><b>NOTE</b></p> <p>Clean and coat fifth wheel more often when Heavy Equipment Transporter (HET) Tractor is operated in sandy or dusty conditions. Lubricate daily under severe conditions.</p> <p>Clean top surface of fifth wheel (1), fifth wheel jaws (2), and fifth wheel ramps (3), and coat with Grease, Automotive and Artillery (GAA). (WP 0124, Table 8)</p>	
 <p style="text-align: center;"><i>Figure 14. Fifth Wheel.</i></p>				
9	Weekly	Fifth Wheel Trailer	1. Check fifth wheel trailer receptacles (1) and seals for damage.	Seals cracked or missing.

Table 1. PMCS - WEEKLY - Continued

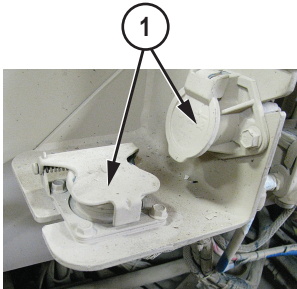
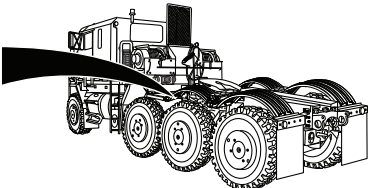
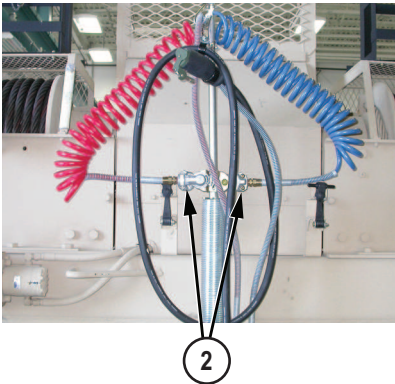
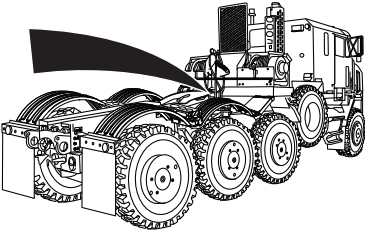
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
		Receptacles and Gladhands		
				
			2. Check gladhands (2) for serviceability:	
				
			a. Check for presence and condition of gladhands (2) and rubber grommets.	Gladhand missing, loose, or

Figure 15. Fifth Wheel Trailer Receptacles.

Figure 16. Gladhands.



**Table 1. PMCS - WEEKLY - Continued**

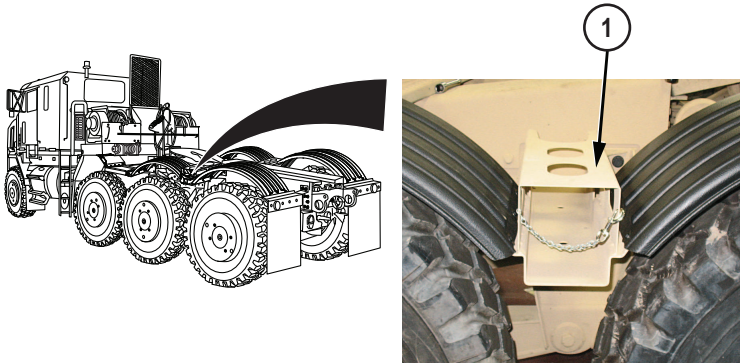
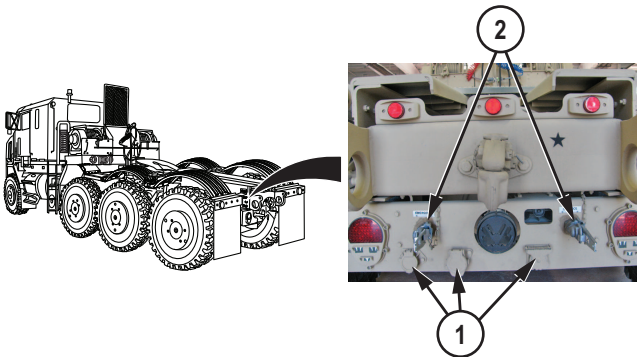
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			b. Remove gladhands (2) from dummy couplings and check condition of seals.	broken. Air leaks noted. Grommets cracked or missing.  Seals cracked or missing.
10	Weekly	Driver Side Chock Block Stowage Box	Check driver side chock block stowage box (1) for looseness.	
 <p style="text-align: center;"><i>Figure 17. Chock Block Stowage Box.</i></p>				
11	Weekly	Rear Trailer Electrical Receptacles and Gladhands	1. Check all receptacles (1) and seals for damage.	

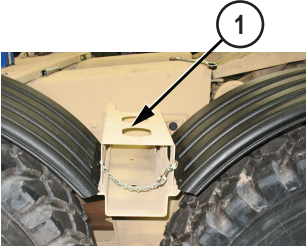
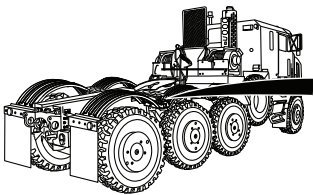
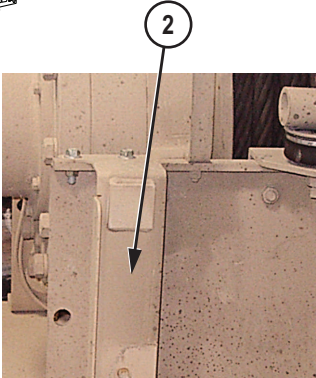
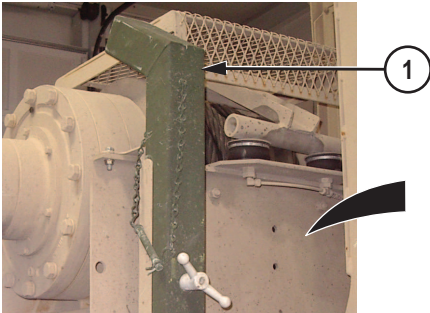
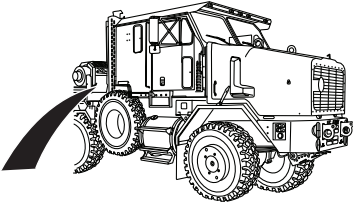
Table 1. PMCS - WEEKLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div></div> <p>The diagram shows a side view of a rear trailer with electrical receptacles and gladhands. A close-up inset shows the electrical components with labels: '1' points to four nuts on the wheel covers, and '2' points to the gladhands. The main diagram shows the trailer with the electrical components highlighted.</p>				
			<div><div>2. Check gladhands (2) for serviceability:</div><div><div>a. Check for presence and condition of gladhands (2) and rubber grommets.</div><div>b. Remove dummy couplings from gladhands (2) and check condition of seals.</div></div></div>	<div>Gladhand missing, loose, or broken. Air leaks noted. Grommets cracked or missing.</div> <div>Seals cracked or missing.</div>
12	Weekly	Passenger Side Tire Assembly	<div>1. Remove four nuts (1) and wheel cover (2) from each wheel.</div>	

**Table 1. PMCS - WEEKLY - Continued**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<p><i>Figure 19. Passenger Side Tire Assembly.</i></p>				
			<ol style="list-style-type: none"> <li>2. Check wheel covers (2) for damage.</li> <li>3. Check wheel studs (3) and nuts (4) for obvious looseness. Check for bent or broken studs and missing or loose nuts.</li> <li>4. Install wheel cover (2) and four nuts (1) on each wheel.</li> </ol>	Any hub has two or more nuts or studs missing, broken, or bent.
13	Weekly	Chock Block Stowage Box	Check chock block stowage box (1) for looseness.	



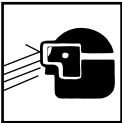
Table 1. PMCS - WEEKLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div></div> <p>Figure 20. Chock Block Stowage Box.</p>				
14	Weekly	Spare Tire Lift	1. Check spare tire lift (1) for obvious damage.	
<div></div> <p>Figure 21. Spare Tire Lift.</p>				
			2. Check spare tire lift mount (2) for loose or missing hardware.	Hardware is loose or missing.

*Table 1. PMCS - WEEKLY - Continued*

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
15	Weekly	Spare Tire	<p><b>WARNING</b></p> <p>Do not operate a Heavy Equipment Transporter (HET) Tractor with a tire in an over-inflated or under-inflated condition, or with a questionable defect. Do not attempt to inflate a tire that is in an over-inflated or under-inflated condition, or with a questionable defect. Failure to comply may result in serious injury or death to personnel and damage to equipment.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>Remember that a tire in storage (spare) can be flat but not look like it. The HET Tractor tire sidewalls can support the wheel. Don't be fooled.</li> </ul>	

Table 1. PMCS - WEEKLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<ul style="list-style-type: none"><li>A tire is bad or in need of repair (unserviceable ) if the bead, side wall, and/ or tread areas show signs of damage.</li><li>This process requires you to make judgment calls to safely maintain equipment in top quality condition.</li></ul> <ol style="list-style-type: none"><li>Check spare tire for serviceability.</li><li>Check that spare tire is securely mounted.</li></ol>	Tire missing or unserviceable.
16	Weekly	Passenger Side Fuel Tank	<p><b>WARNING</b></p> <div></div> <p>Fuel is very flammable and can explode easily. Keep fuel away</p>	

**Table 1. PMCS - WEEKLY - Continued**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited when engine is hot. When working with fuel, wear proper eye protection and rubber gloves. Post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE. Failure to comply may result in serious injury or death to personnel.</p> <p>1. Check fuel filler cap (1) for dirt and wipe clean if necessary.</p>	

Table 1. PMCS - WEEKLY - Continued

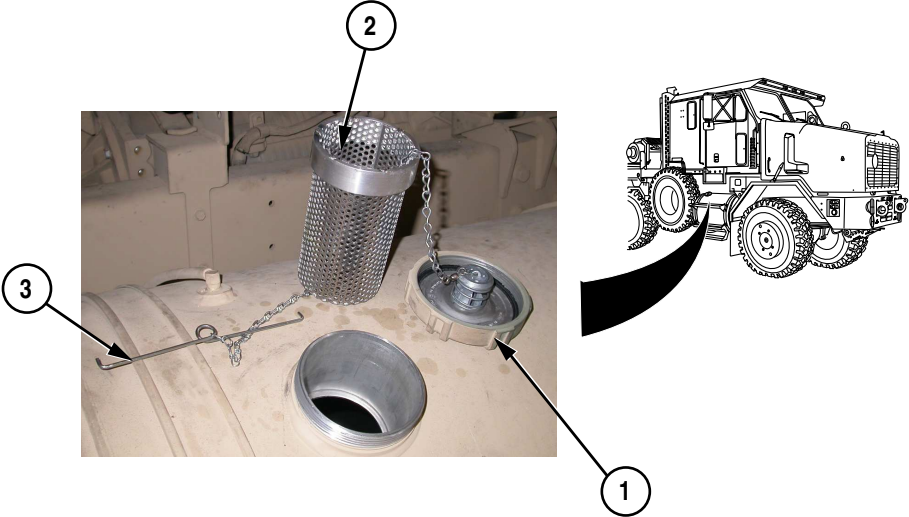
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
		<div></div>		
			<div><div>a. Remove fuel filler cap (1). Check rubber seal inside fuel filler cap (1) for damage.</div><div>b. Pull strainer (2) out of fuel tank and release retaining wire (3). Clean with dry rag.</div><div>c. Check fuel tank, fuel hoses, and connections for leaks and/or damage.</div></div>	Any leakage of fuel evident.



Table 1. PMCS - WEEKLY - Continued

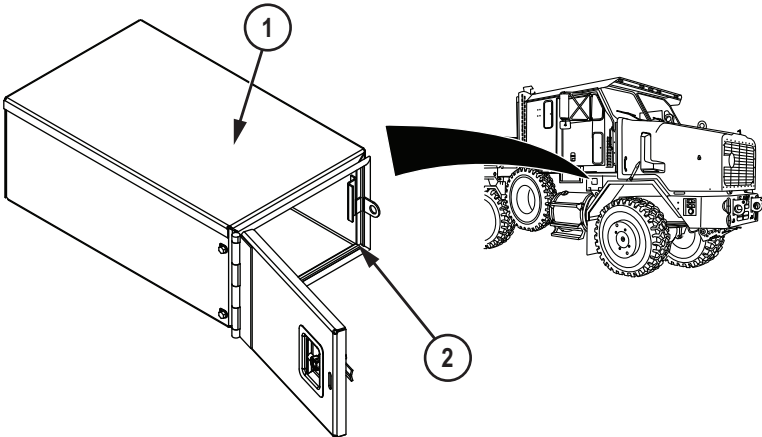
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
17	Weekly	Stowage Box	<div>1. Check inside stowage box (1) for torn or damaged seal (2), water in bottom or other obvious damage. If damage is present or water is found in box, notify field level maintenance.</div> <div></div>	
			<div>2. Check stowage box (1) for missing hardware.</div> <div>3. Check that stowage box (1) lock moves/ operates freely.</div> <div>4. Check that stowage box (1) door hinges move freely.</div>	

Figure 23. Stowage Box.

**Table 1. PMCS - WEEKLY - Continued**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
18	Weekly	Engine Compartment (Passenger Side)	<ol style="list-style-type: none"> <li>1. Check entire area for loose or missing hardware, wires, connectors, hoses, and air lines.</li> <li>2. Check radiator hoses for rotting, leakage, and loose clamps.</li> <li>3. Check radiator for leaks, damaged fins, and missing baffles.</li> <li>4. Check charge air cooler and air conditioning condenser for leaks, damaged fins, and missing baffles.</li> <li>5. Check turbocharger oil lines (1) for damage or wear.</li> </ol>	<p>Any Class III leakage evident.</p> <p>Any Class III leakage evident.</p> <p>Air conditioning leaks or any damage sufficient to impair operation.</p> <p>Any Class III leakage evident.</p>

Table 1. PMCS - WEEKLY - Continued

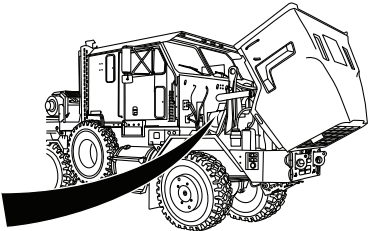
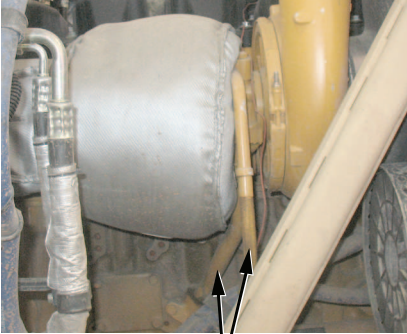
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div><p>1</p><p>Figure 24. Turbocharger Oil Lines.</p></div>				
			6. Check heater hoses (2) for looseness, cracks, leaks, or chafing.	Heater hoses loose, cracked, leaking, or chafing. Any Class III leakage evident.

Table 1. PMCS - WEEKLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
		<div></div>		
			7. Check radiator vent hose (3) for cracks, leaks, or chafing.	Leaks, cracks, or frays are found.

Figure 25. Heater Hoses.

Table 1. PMCS - WEEKLY - Continued

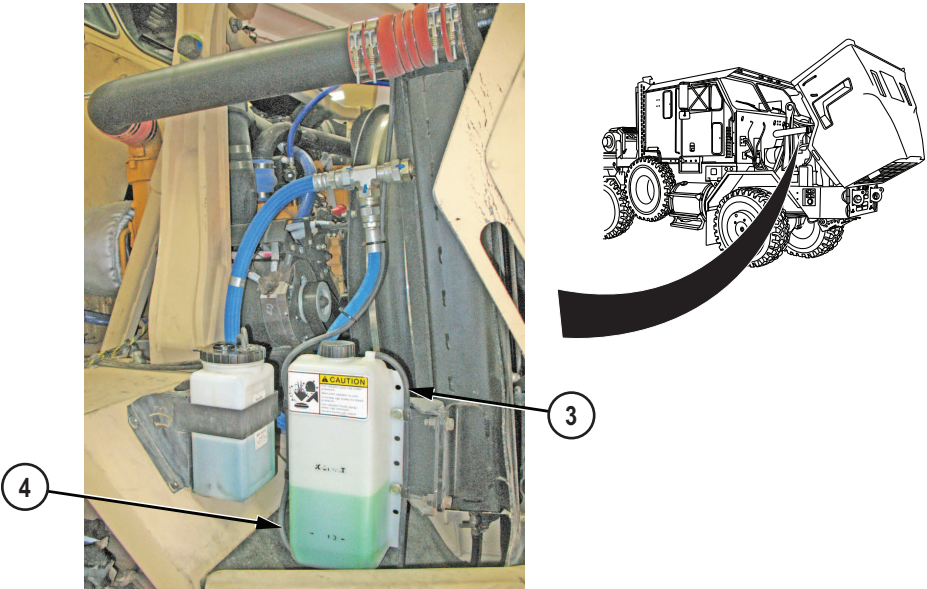
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div></div>				
19	Weekly	Front Electrical Receptacle and Gladhands	8. Check overflow hose (4) for cracks or leaks.	
			9. Close hood. (WP 0129)	
19	Weekly	Front Electrical Receptacle and Gladhands	1. Check front electrical receptacle (1) and seals for damage.	

Figure 26. Radiator Overflow Tank and Vent Hose.

**Table 1. PMCS - WEEKLY - Continued**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div> </div> <div> </div>				
			<ol style="list-style-type: none"> <li>2. Check gladhands (2) for serviceability:               <ol style="list-style-type: none"> <li>a. Check for presence and condition of gladhands (2) and rubber grommets.</li> <li>b. Remove dummy couplings from gladhands (2) and check condition of seals.</li> </ol> </li> </ol>	<p>Gladhand missing, loose, or broken. Air leaks noted. Grommets cracked or missing.</p> <p>Seals cracked or missing.</p>
20	Weekly	Gladhands	<ol style="list-style-type: none"> <li>1. Check for presence and condition of gladhands and rubber grommets.</li> </ol>	<p>Gladhand missing, loose, or broken. Air leaks noted. Grommets cracked or missing.</p>

Table 1. PMCS - WEEKLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			2. Remove dummy couplings and check condition of seals.	Seals cracked or missing.
21	Weekly	Undercarriage	1. Check steering pump and hoses for leaks and loose or missing mounting hardware.	Class III oil leaks are found.

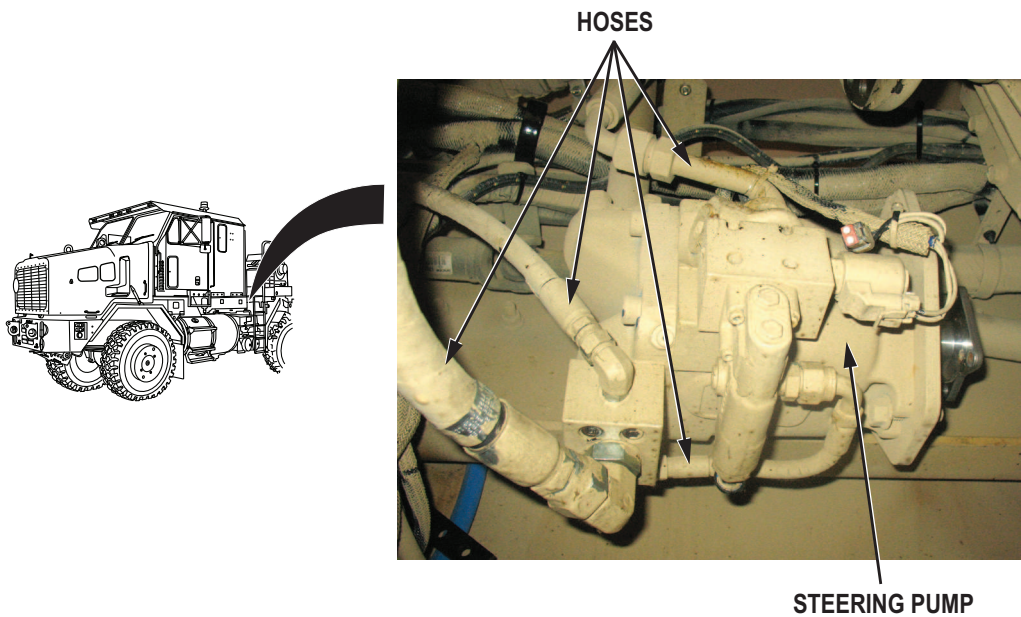


Figure 28. Steering Pump and Hoses.

			2. Check undercarriage for obvious damage to propeller shafts.	Propeller shaft or U-joint has excessive movement, obvious
--	--	--	--	--

Table 1. PMCS - WEEKLY - Continued

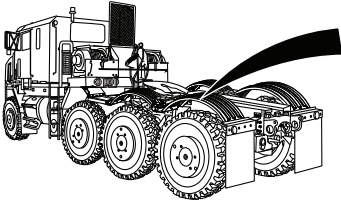
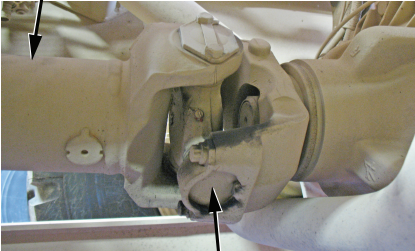
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				damage, or one or more nuts or screws are loose, missing, or damaged.
<div><div><p>Diagram of a truck chassis showing the propeller shaft location.</p></div><div><p>PROPELLER SHAFT</p><p>UNIVERSAL JOINT</p></div></div>				
			<div><div>3. Check universal joints for obvious damage or missing hardware.</div><div>4. Check steering hoses and shafts for obvious damage or missing hardware.</div></div>	<div>Any hardware is missing or broken.</div> <div>Any hardware is missing or broken.</div>

Figure 29. Propeller Shafts and Universal Joints.



**Table 1. PMCS - WEEKLY - Continued**

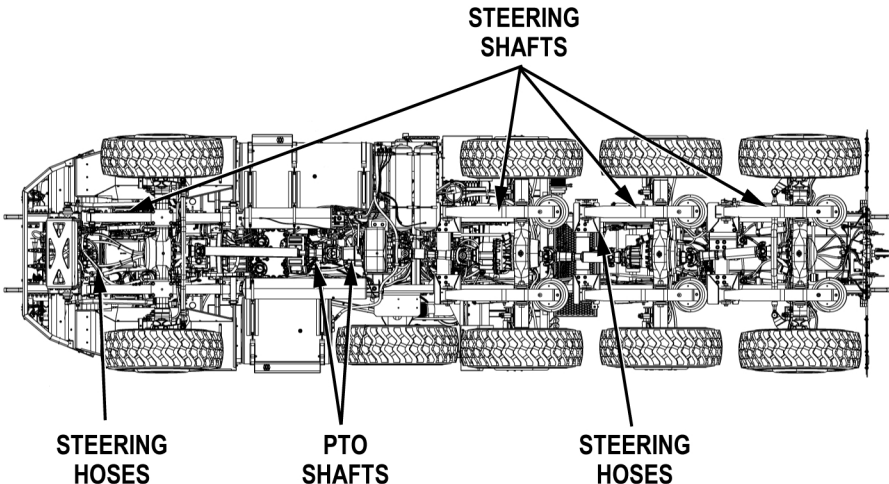
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
 <p>The diagram shows a top-down view of a truck chassis. Arrows point from the text labels to specific components: 'STEERING SHAFTS' points to the central shafts connecting the steering knuckles to the frame; 'STEERING HOSES' points to the hoses at the front and rear steering knuckles; and 'PTO SHAFTS' points to the shafts connecting the PTO to the drivetrain.</p>				
			<p>5. Check upper and lower PTO shafts for obvious damage or missing hardware.</p> <p>6. Check front and rear steering gears for obvious damage or missing hardware.</p>	<p>Any hardware is missing or broken.</p> <p>Any hardware is missing or broken.</p>

Table 1. PMCS - WEEKLY - Continued

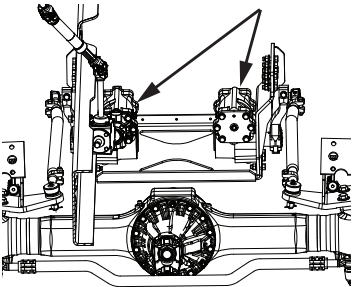
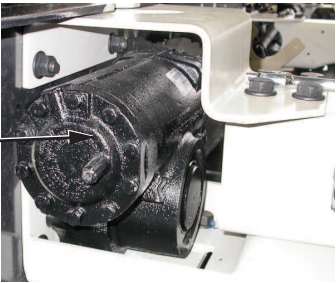
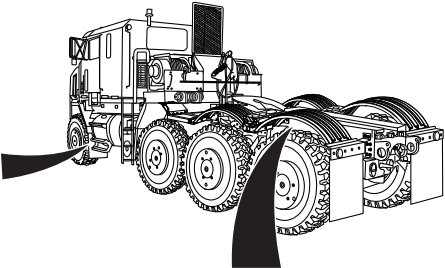
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
		<div><p>FRONT STEERING GEARS</p><p>REAR STEERING GEAR</p></div>		
			7. Check frame crossmembers for obvious damage or missing hardware.	Any broken crossmembers, broken welds, or missing or broken hardware found.

Figure 31. Steering Gears.

Table 1. PMCS - WEEKLY - Continued

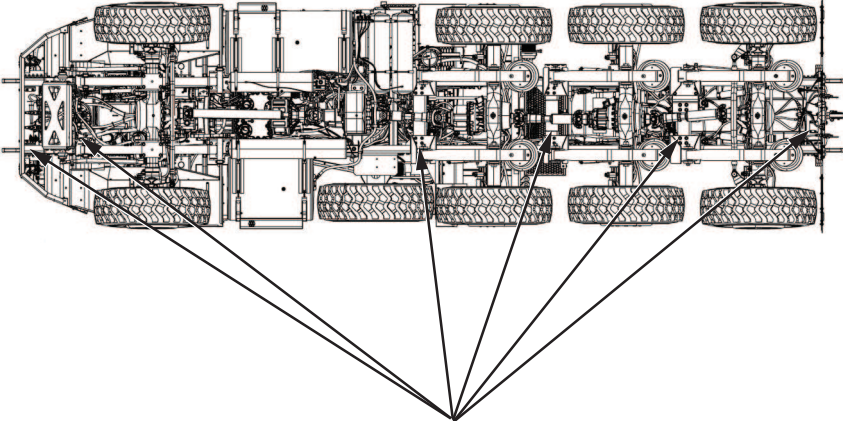
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div><p>CROSSMEMEBERS</p></div>				
			8. Check driver side ride height linkage for obvious damage or missing hardware.	Any hardware is missing or broken.

Figure 32. Frame Crossmembers.

Table 1. PMCS - WEEKLY - Continued

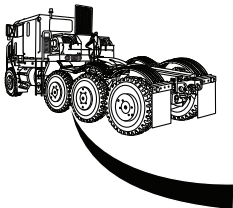
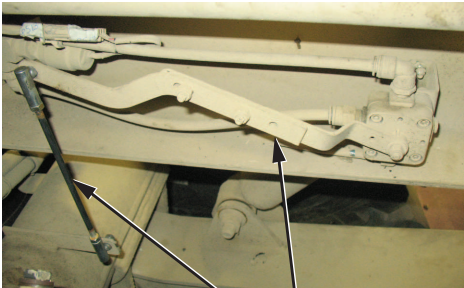
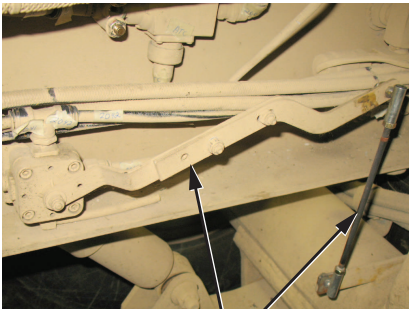
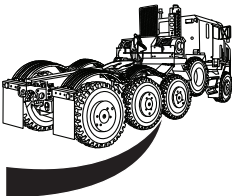
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>DRIVER SIDE RIDE HEIGHT LINKAGE</p> <p>Figure 33. Driver Side Ride Height Linkage.</p>	
			9. Check passenger side ride height linkage for obvious damage or missing hardware.	Any hardware is missing or broken.
			<p>PASSENGER SIDE RIDE HEIGHT LINKAGE</p> <p>Figure 34. Passenger Side Ride Height Linkage.</p>	

Table 1. PMCS - WEEKLY - Continued


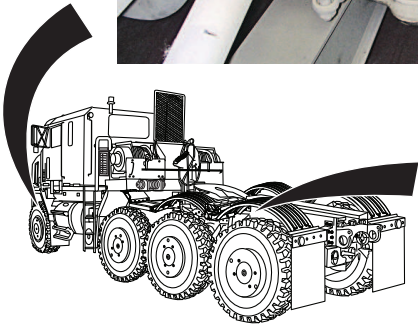

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			10. Check front and rear tie rods for obvious damage or missing hardware.	Any hardware is missing or broken.
<div><div><p>FRONT TIE ROD</p></div><div></div><div><p>REAR TIE ROD</p></div></div>				
			11. Check torque rods for obvious damage or missing hardware.	Any hardware is missing or broken.

Figure 35. Tie Rods.

Table 1. PMCS - WEEKLY - Continued

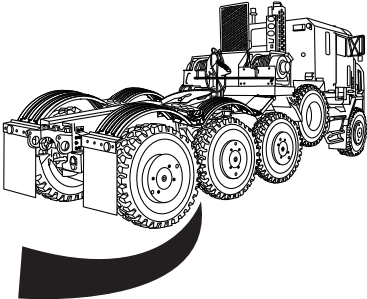

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
		<div><p>TORQUE RODS</p></div>		
			<p><b>NOTE</b></p> <p>Top engine mount and isolators are not visible.</p> <p>12. Check bottom engine mount and isolators for cracks, splits, obvious damage or missing hardware.</p>	<p>Any hardware is missing or broken.</p>

Figure 36. Torque Rods.

Table 1. PMCS - WEEKLY - Continued

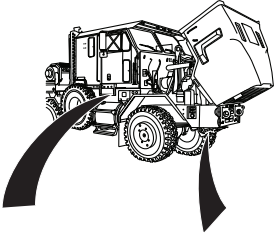
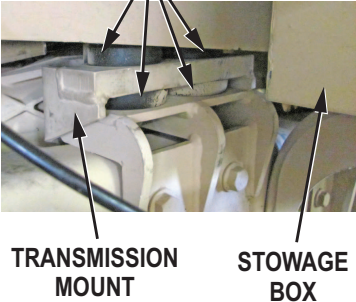
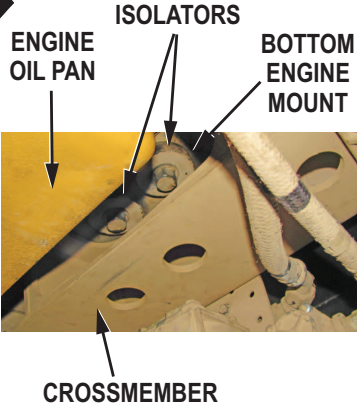
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
		<div>  </div>		
			<p><b>NOTE</b></p> <p>Driver side and passenger side transmission mounts and isolators are the same. Passenger side shown.</p> <p>13. Check driver side and passenger side transmission mounts and isolators for cracks, splits, obvious damage or missing hardware.</p>	<p>Any hardware is missing or broken.</p>

Figure 37. Bottom Engine Mount and Isolators/Driver Side and Passenger Side Transmission Mounts and Isolators.

**Table 1. PMCS - WEEKLY - Continued**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>14. Check engine and transmission for obvious damage or missing hardware.</p> <p>15. Check transmission oil cooling lines for cracks or leaks.</p> <p>16. Check air lines and hoses for obvious damage.</p> <p>17. Check for chafed wiring.</p> <p>18. Check transfer case, transfer case mounts, and isolators for cracks, splits and obvious damage or missing hardware.</p>	<p>Any hardware is missing or broken.</p> <p>Any Class III leak is found. Lines are cracked or frayed.</p> <p>Any leaks, kinks, damage to lines, hoses, or fittings found.</p> <p>Any wires are chafed or frayed.</p> <p>Any Class III leakage evident. Damage is found that would limit operation. Transfer case mount is loose or damaged or mounting biscuits are missing. Any hardware is missing or broken.</p>



Table 1. PMCS - WEEKLY - Continued

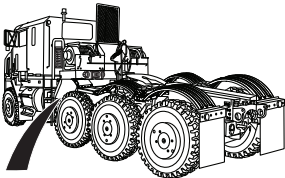

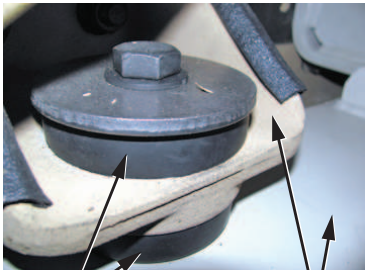
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
		<div><p>TRANSFER CASE MOUNTS</p><p>TRANSFER CASE ISOLATORS</p><p>TRANSFER CASE ISOLATORS      TRANSFER CASE MOUNTS</p></div>	19. Check air dryers for loose screws and connections.	

Figure 38. Transfer case Mounts and Isolators.

Table 1. PMCS - WEEKLY - Continued

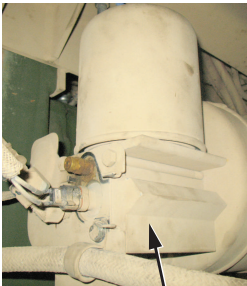
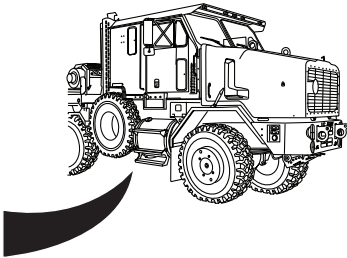
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
		<div><p>AIR DRYER</p></div>	<div></div>	
			<p><b>NOTE</b></p> <ul style="list-style-type: none"><li>• All axle breathers are serviced in a similar way. Axle No. 4 shown.</li><li>• Axle No. 2 breather is located at end of nylon tube coming from axle housing.</li></ul> <p>20. Check axle breathers for damage and free movement of vent caps on breather.</p>	<p>Any breather damaged, or vent caps not moveable.</p>

Table 1. PMCS - WEEKLY - Continued

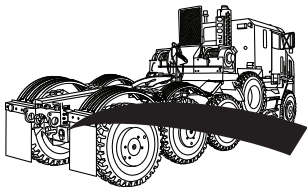
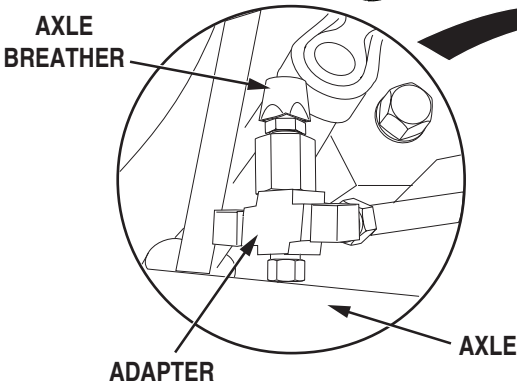

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div>  </div>				
			21. Check air springs (bags) for obvious damage.	Any air leaks or obvious damage is found.

Figure 40. Axle Breathers.

Table 1. PMCS - WEEKLY - Continued

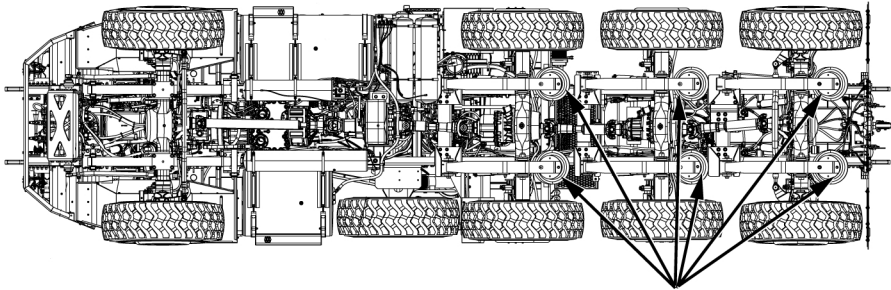
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div><p>AIR SPRINGS (AIR BAGS)</p></div>				
			<p><b>NOTE</b></p> <p>All axle No. 2, No. 3, and No. 4 spring/parking brake chambers dust covers are the same. Axle No. 2 driver side shown.</p> <p>22. Check that rear spring/parking brake chamber dust covers are in place and secure.</p>	

Figure 41. Air Springs (Air Bags).

Table 1. PMCS - WEEKLY - Continued

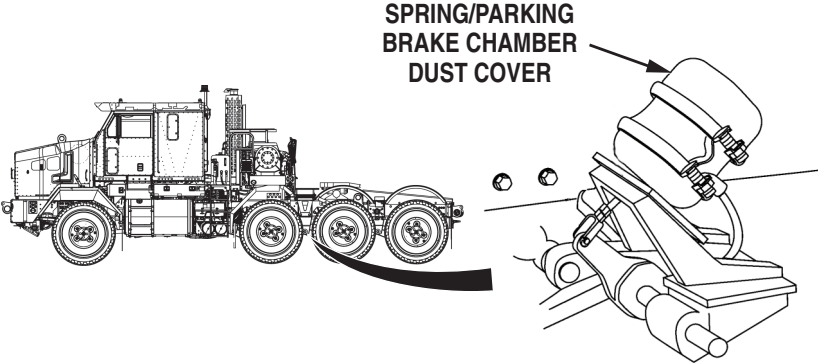
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div><p>The diagram shows a side profile of a truck. A curved arrow points from the rear of the truck to a detailed view of the spring/parking brake chamber dust cover. The detailed view shows the dust cover with an arrow pointing to it from the text 'SPRING/PARKING BRAKE CHAMBER DUST COVER'.</p></div>				
<p>Figure 42. Spring/Parking Brake Dust Covers.</p>				
			<div><p><b>NOTE</b></p><ul style="list-style-type: none"><li>• When vehicle is operating under severe conditions, lubricate propeller shafts and universal joints every 50 hours of vehicle operation.</li><li>• Complete Step (23) if vehicle is operating under severe conditions.</li></ul></div>	
			<p>23. Lubricate all propeller shafts, transmission to transfer case propeller shaft, and U-joints with</p>	

Table 1. PMCS - WEEKLY - Continued

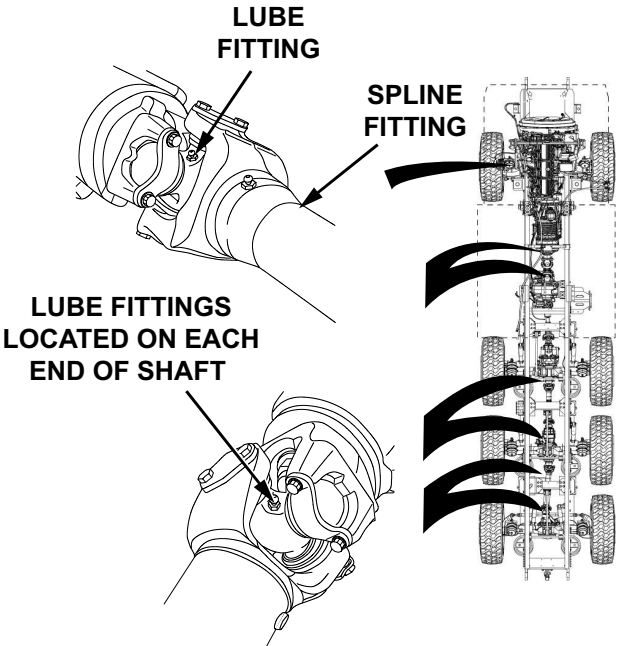
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			GAA (WP 0124, Table 8) as required:	
			<div>a. Apply GAA (WP 0124, Table 8) to spline fitting until lubricant appears at pressure relief hole.</div> <div>b. Cover pressure relief hole with finger and continue adding grease until</div>	Fitting will not purge old lubricant out of component

Figure 43. Propeller Shafts.

Table 1. PMCS - WEEKLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			it appears at sleeve yoke seal.	(contact field level maintenance).

END OF TASK

END OF WORK PACKAGE





OPERATOR MAINTENANCE  
MONTHLY - PREVENTIVE MAINTENANCE

INITIAL SETUP:

Tools and Special Tools

Gloves, Leather (WP 0138, Table 2)

Tools and Special Tools (cont.)

Goggles, Industrial (WP 0138, Table 2)  
Wrench, Air-Powered, 3/4 in. Square Drive (WP 0137, Table 3, Item 48)

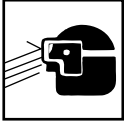
References

TM 3-4230-214-12&P (WP 0136)  
FM 21-40 (WP 0136)  
TM 3-6665-225-12 (WP 0136)

Table 1. PMCS - MONTHLY

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p><b>WARNING</b></p> <p>Do not start engine or move Heavy Equipment Transporter (HET) Tractor when anyone is under HET Tractor or working on brake lines. Failure to comply may result in serious injury or death to personnel.</p>	

Table 1. PMCS - MONTHLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<div><div><b>WARNING</b></div><div></div><div>Ensure engine is OFF and eye protection is worn when checking for leaks. Failure to comply may result in serious injury or death to personnel.</div><div><b>NOTE</b></div><div><ul style="list-style-type: none"><li>• Lubrication intervals for HET Tractor are for normal operating conditions. Intervals may be shortened as required for severe operating conditions.</li><li>• Clean all lubrication points with solvent cleaning compound and allow to dry prior to servicing.</li></ul></div></div>	

**Table 1. PMCS - MONTHLY - Continued**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<ul style="list-style-type: none"> <li>• When using a grease gun, apply lubricant to the fitting until clean lubricant squeezes out of the part being lubricated.</li> <li>• Always refer to Lubrication Instructions (WP 0124) to ensure equipment has correct lubricants appropriate to operating environment (expected continuous temperatures). If not, remove/drain and reapply/refill equipment with appropriate lubricants for operating environments as prescribed in Lubrication Instructions.</li> </ul>	
1	Monthly	Damage and Corrosion Check	1. Check entire vehicle for obvious damage and/or corrosion.	Any broken, cracked, bent frame rails, cross-members, or screws are found.

Table 1. PMCS - MONTHLY - Continued

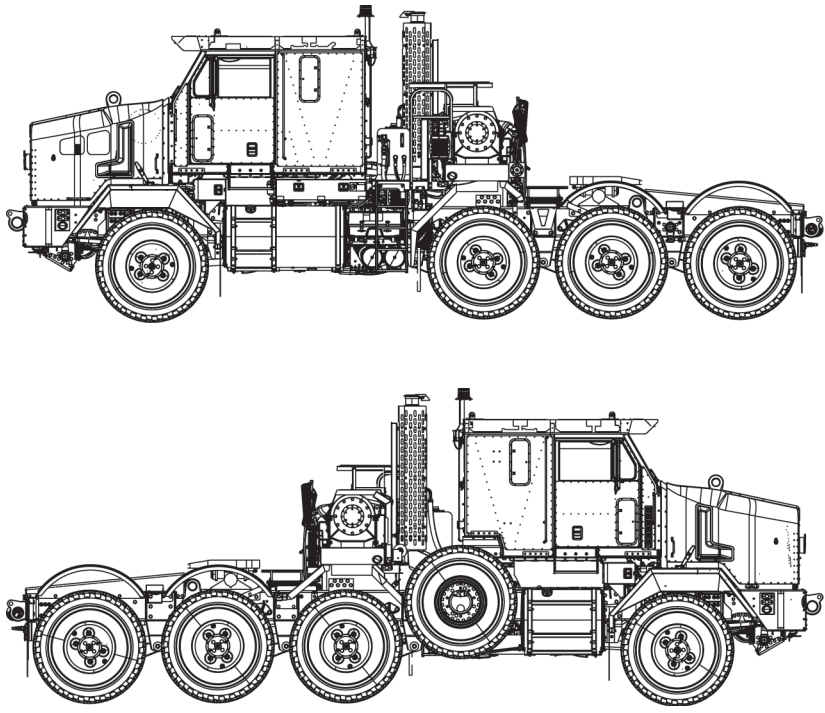
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div></div> <p>Figure 1. HET Tractor Exterior.</p>				
2	Monthly	Tires	<p><b>WARNING</b></p> <p>Do not operate a Heavy Equipment Transporter (HET) Tractor with a tire in an over-inflated or under-inflated condition, or with a questionable defect. Do not attempt to inflate a tire that is in an over-inflated or under-inflated condition,</p>	

Table 1. PMCS - MONTHLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>or with a questionable defect. Failure to comply may result in serious injury or death to personnel and damage to equipment.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"><li>• A tire is bad or in need of repair if the bead, side wall, and/or tread areas show signs of damage.</li><li>• This process requires you to make judgment calls to safely maintain equipment in top quality condition.</li></ul> <p>1. Check each tire (including spare) for serviceability:</p> <p>a. Check each tire for cuts, gouges, or cracks.</p>	<p>Tire(s) have cuts, gouges, or cracks that would result in tire failure during operation. One or more</p>

Table 1. PMCS - MONTHLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<div>b. Remove any sharp objects embedded in tire. Notify field level maintenance.</div> <div>c. Check each tire's tread wear indicator bar.</div>	<div>tires are missing or unserviceable and no spare is available.</div> <div>Removal of object embedded in tire results in serious air leak.</div> <div>Tire excessively or unevenly worn.</div>
3	Monthly	Driver Side Pneumatic Air Chuck	1. Check pneumatic air chuck (1) connection and function:	

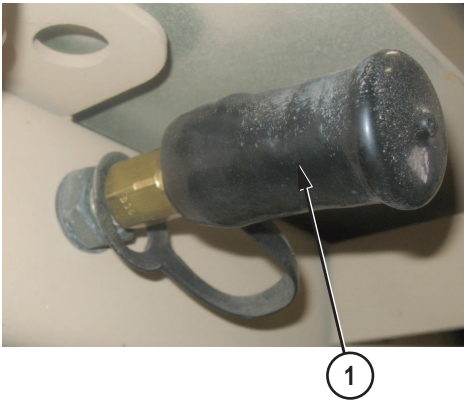
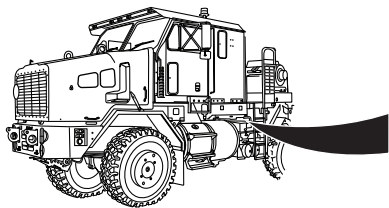


Figure 2. Driver Side Accessory Air Supply Coupling.

**Table 1. PMCS - MONTHLY - Continued**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<ol style="list-style-type: none"> <li>a. Connect air powered wrench (WP , Table 3, Item 48) to passenger side pneumatic air chuck.</li> <li>b. Operate air powered wrench (WP 0137, Table 3, Item 48) to determine function, connection and adequate air supply.</li> </ol>	<p>Pneumatic air chuck not functional or air pressure not available.</p>
4	Monthly	Winch Hydraulic System	<ol style="list-style-type: none"> <li>1. Check all hydraulic hoses (1) for obvious damage, rotting, chafing, loose fittings, and leaks.</li> </ol>	<p>Any Class III leakage evident.</p>

Table 1. PMCS - MONTHLY - Continued

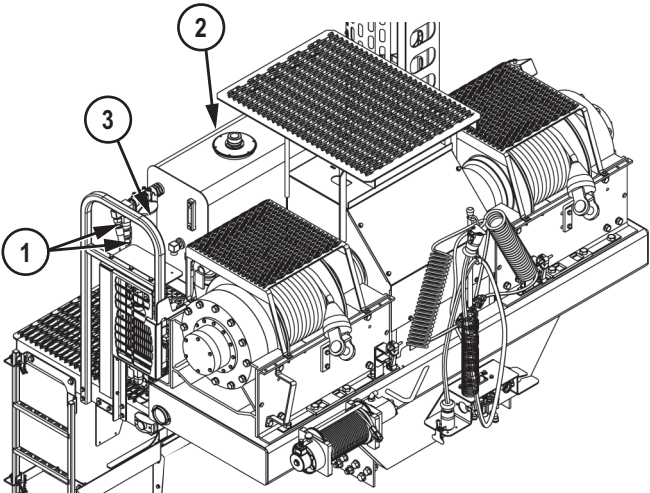
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div><p>The diagram shows a winch hydraulic system. Callout 1 points to a hydraulic filter on the left side. Callout 2 points to a large hydraulic reservoir at the top. Callout 3 points to a smaller component, likely a filter or valve, located below the reservoir. The system includes a winch drum, various hoses, and a pump mechanism.</p></div>				
			2. Check hydraulic reservoir (2) for leaks.	Any Class III leakage evident.
			3. Check filter (3) for leaks.	Any Class III leakage evident.
			4. Check hydraulic oil cooler for leaks, damage, or dirt and debris clogging cooling fins. Clean if clogged.	Class III leaks or damage found.

Figure 3. Winch Hydraulic System.



Table 1. PMCS - MONTHLY - Continued

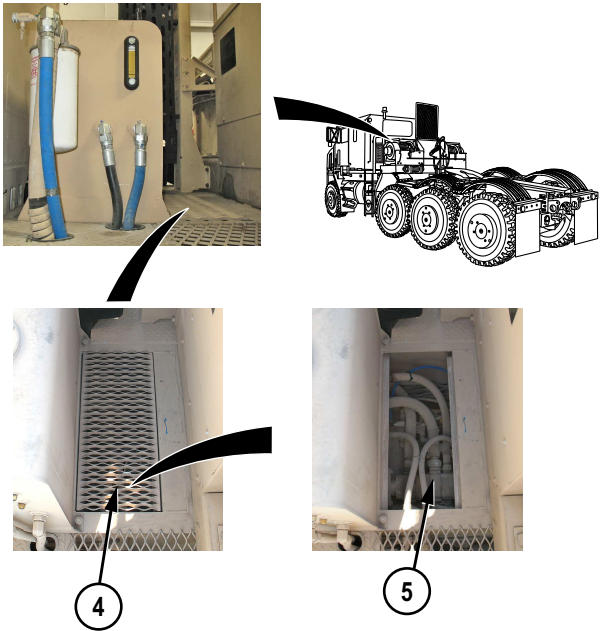
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<ol style="list-style-type: none"><li>Remove winch platform access panel (4) and check hydraulic pump (5) for loose screws or damage.</li><li>Install winch platform access panel (4).</li><li>Check hydraulic test ports and fittings for damage or leaks.</li></ol>	Any class III leak.

Table 1. PMCS - MONTHLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
5	Monthly	Pintle Hook	<p><b>NOTE</b></p> <p>Proper pintle hook installation includes proper tightening of the pintle mounting nut. Pintle mounting nut should be tightened only until contact with crossmember. Install cotter pin through nut and pintle hook.</p> <ol style="list-style-type: none"><li>1. Check pintle hook (1) for proper installation and damaged locking mechanism or locking pin.</li></ol>	<p>Pintle hook is not properly installed, cotter pin(s) are missing, and/or locking mechanism is damaged and equipment is required for mission.</p>

*Table 1. PMCS - MONTHLY - Continued*

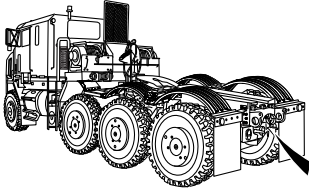
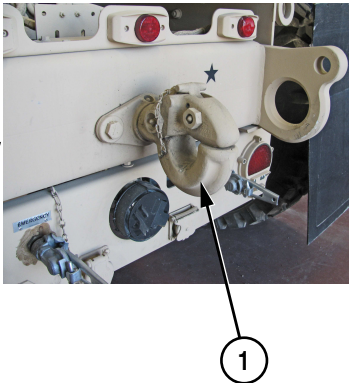
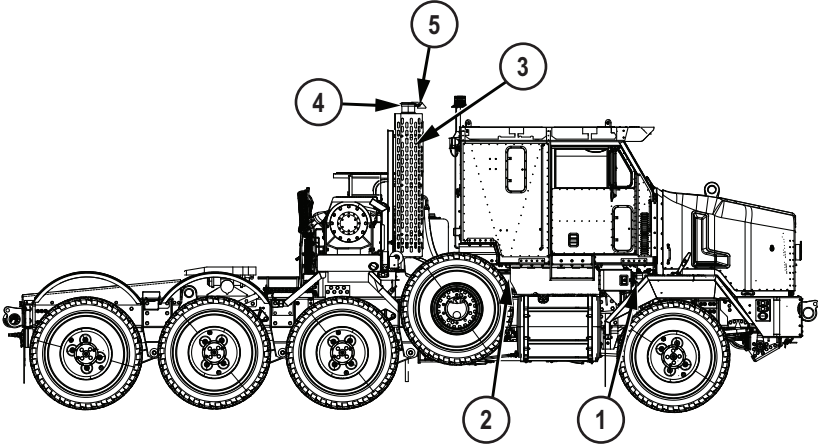
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p style="text-align: center;"><i>Figure 5. Pintle Hook.</i></p>				
			<ol style="list-style-type: none"> <li>Ensure pintle hook (1) rotates 360 degrees.</li> <li>Clean pintle hook (1) and lightly coat inside mating surface with GAA. (WP 0124, Table 8)</li> </ol>	Pintle hook does not rotate 360 degrees.
6	Monthly	Exhaust System	<ol style="list-style-type: none"> <li>Check exhaust pipe (1), muffler (2), heat guards (3), tailpipe (4), and raincap (5) for loose clamps, damaged mountings, and obvious damage.</li> </ol>	Any exhaust pipe is damaged or missing.

Table 1. PMCS - MONTHLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div></div> <p>Figure 6. Exhaust System.</p>				
			2. Check rain cap (5) for proper operation.	Raincap sticks or will not open or close.
7	Monthly	Passenger Side Pneumatic Air Chuck	1. Check air supply coupling (1) connection and function:	

*Table 1. PMCS - MONTHLY - Continued*

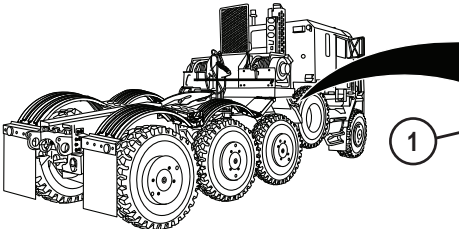
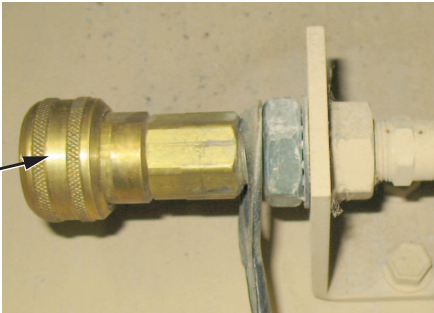
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div style="display: flex; align-items: center; justify-content: center;">   </div>				
			<ol style="list-style-type: none"> <li>a. Connect air powered wrench (WP 0137, Table 3, Item 48) to passenger side pneumatic air chuck.</li> <li>b. Operate air powered wrench (WP 0137, Table 3, Item 48) to determine function, connection and adequate air supply.</li> </ol>	Pneumatic air chuck not functional or air pressure not available.
8	Monthly	Gas Particulate Filter Unit	<p><b>WARNING</b></p> <p>NBC-contaminated filters must be handled using adequate precautions and must be disposed of by trained personnel. (refer to</p>	

Table 1. PMCS - MONTHLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>FM 21-40). Failure to comply may result in serious injury or death to personnel.</p> <p><b>NOTE</b></p> <p>Not all HET Tractors are equipped with Gas Particulate Filter Units.</p> <p>1. Check hoses (1) for cuts, tears, cracks, or holes.</p>	<p>Hoses damaged.</p>

Table 1. PMCS - MONTHLY - Continued

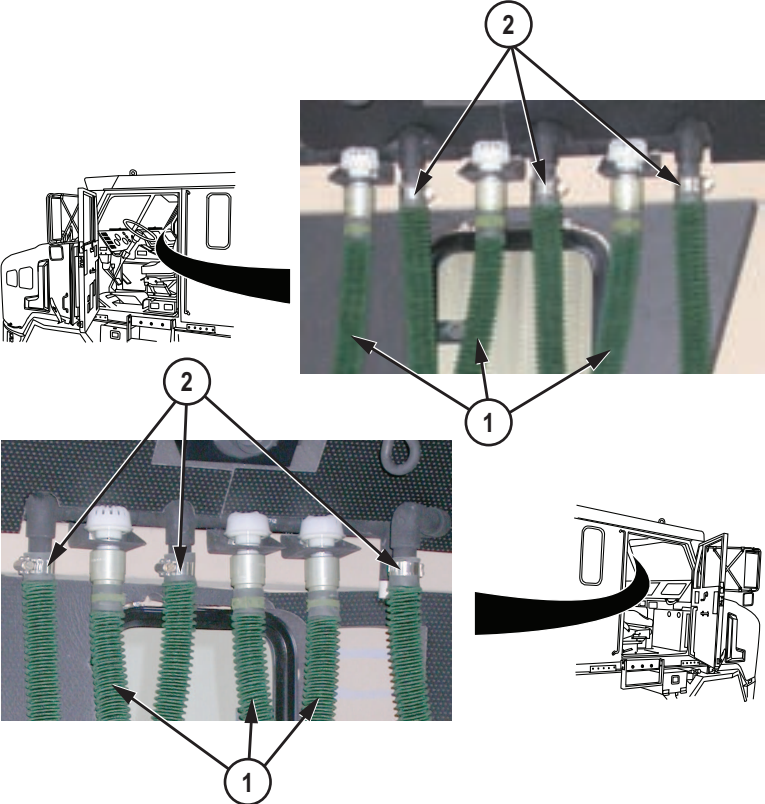
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				
			<div>2. Make sure hose clamps (2) are secure. Tighten if needed.</div> <div>3. Check operation of gas particulate filter unit.</div>	Hose clamp(s) damaged or cannot be tightened.

Table 1. PMCS - MONTHLY - Continued

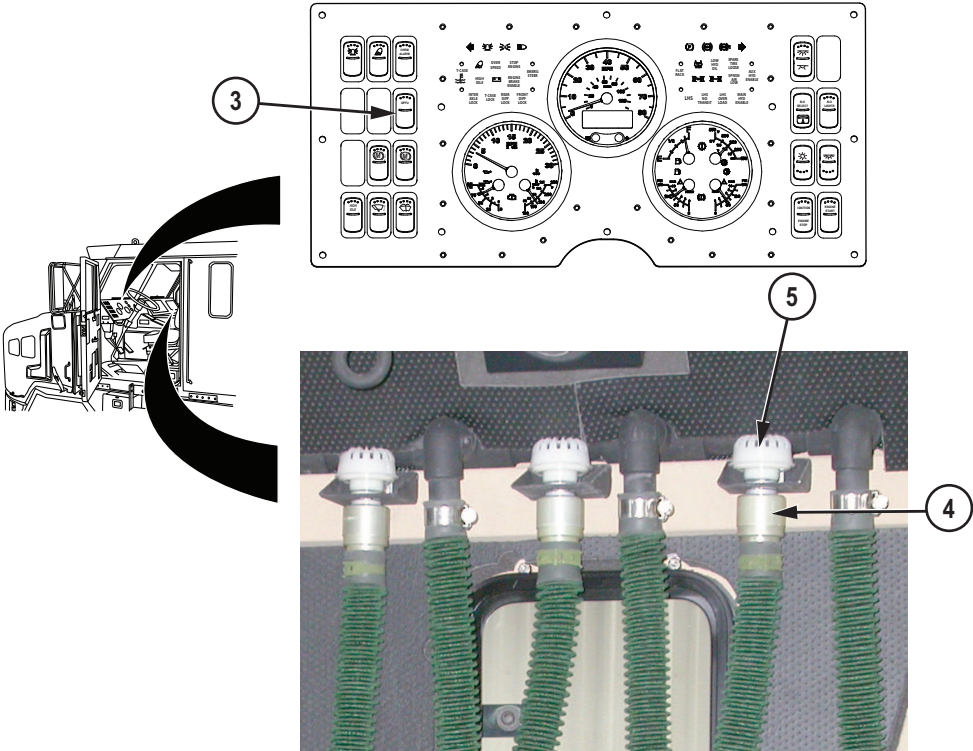
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<div>a. Push GPFU switch (3) up to on position.</div> <div></div>	
			<div>b. Listen for gas particulate filter motor operation.</div> <div>c. Disconnect six air duct breakaway sockets (4) from</div>	<div>Motor does not operate.</div> <div>Airflow not felt at break-away sockets.</div>

Figure 9. GPFU Operation.



Table 1. PMCS - MONTHLY - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			mounts (5) and feel for steady airflow.  4. Push GPFU switch (3) down to off position.  5. Check precleaner (6) and particulate filter housings (7) for cracks, dents, or breaks. Wipe with clean cloth.	Housing(s) cracked or broken.

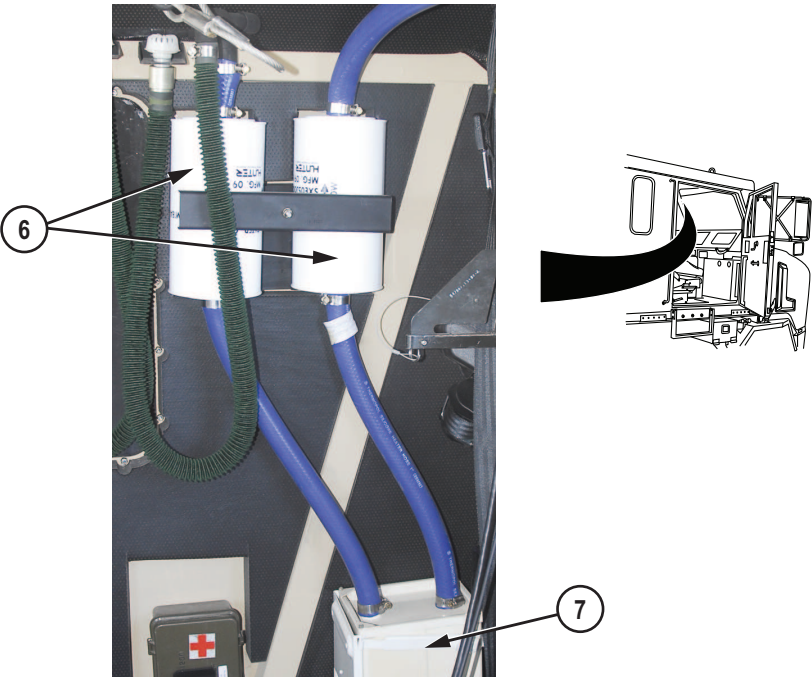


Figure 10. GPFU Precleaner and Particulate Filter.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE  
SEMIANNUAL - PREVENTIVE MAINTENANCE

INITIAL SETUP:

Tools and Special Tools

- Gloves, Leather (WP 0138, Table 2)
- Goggles, Industrial (WP 0138, Table 2)

Table 1. PMCS - SEMIANNUAL

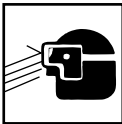
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p><b>WARNING</b></p> <p>Do not start engine or move Heavy Equipment Transporter (HET) Tractor when anyone is under HET Tractor or working on brake lines. Failure to comply may result in serious injury or death to personnel.</p> <p><b>WARNING</b></p>  <p>Ensure engine is OFF and eye protection is worn when checking for leaks. Failure to comply may result in</p>	

Table 1. PMCS - SEMIANNUAL - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>serious injury or death to personnel.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"><li>• Lubrication intervals for the HET Tractor are for normal operating conditions. Intervals may be shortened as required for severe operating conditions.</li><li>• Clean all lubrication points with solvent cleaning compound and allow to dry prior to servicing.</li><li>• When using a grease gun, apply lubricant to the fitting until clean lubricant squeezes out of the part being lubricated.</li></ul>	

**Table 1. PMCS - SEMIANNUAL - Continued**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<ul style="list-style-type: none"> <li>Always refer to Lubrication Instructions to ensure equipment has correct lubricants appropriate to operating environment (expected continuous temperatures). If not, remove/drain and reapply/refill equipment with appropriate lubricants for operating environment as prescribed in Lubrication Instructions.</li> </ul>	
1	Semiannual	Brake System	1. Lubricate axle No. 1, No. 2, No. 3, and No. 4 brake camshafts and slack adjusters with Grease, Automotive and Artillery (GAA). (WP 0124, Table 3)	Fitting will not purge old lubricant out of component (contact field level maintenance).

Table 1. PMCS - SEMIANNUAL - Continued

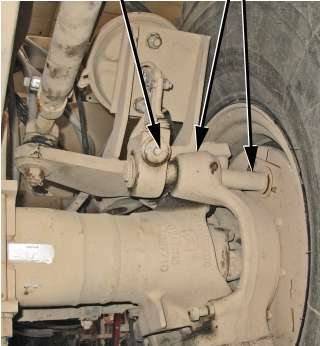
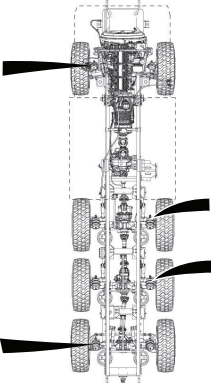
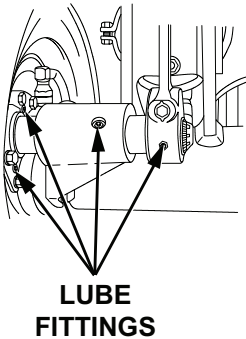
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div><div><div><div>SLACK ADJUSTER</div><div>BRAKE CAMSHAFT</div></div></div><div></div><div></div></div> <p>Figure 1. Brake System.</p>				
2	Semiannual	Propeller Shafts and U-Joints	<div><div>NOTE</div><ul style="list-style-type: none"><li>When vehicle is operating under severe conditions, lubricate propeller shafts and universal joints every 50 hours of vehicle operation.</li></ul></div>	

Table 1. PMCS - SEMIANNUAL - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<ul style="list-style-type: none"><li>• Use the proper lubricant to purge all four bearing seals of each universal joint. This flushes abrasive contaminants from each bearing and assures all four bearings are filled properly. Pop the seals, these seals are made to be popped. Popping refers to pushing old lubricant out of seal.</li></ul>	

Table 1. PMCS - SEMIANNUAL - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<ul style="list-style-type: none"><li>If any seals fail to purge, move propeller shaft from side-to-side while applying gun pressure. This allows greater clearance on thrust end of bearing that is not purging. If seals still do not purge, rock vehicle by releasing the parking brake, start engine, put transmission in D (drive) or R (reverse), and allow vehicle to roll. This removes windup in the driveline and allows for a greater clearance on the thrust end of universal joint.</li></ul>	



**Table 1. PMCS - SEMIANNUAL - Continued**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<ul style="list-style-type: none"> <li>Because of the design of the universal joint seal, there will occasionally be one or more bearing seals of a joint that may not purge. If this occurs, notify field level maintenance.</li> <li>Universal joint may have one or two grease fittings. If there are two grease fittings, either fitting can be greased. It is not necessary to grease both fittings.</li> </ul> <p>1. Check propeller shafts (1) for missing weights, grease fittings, screws, and leaking seals.</p>	<p>Damage is found, propeller shafts are loose, weights, grease fittings, or screws are missing. Contact field level maintenance.</p>

Table 1. PMCS - SEMIANNUAL - Continued

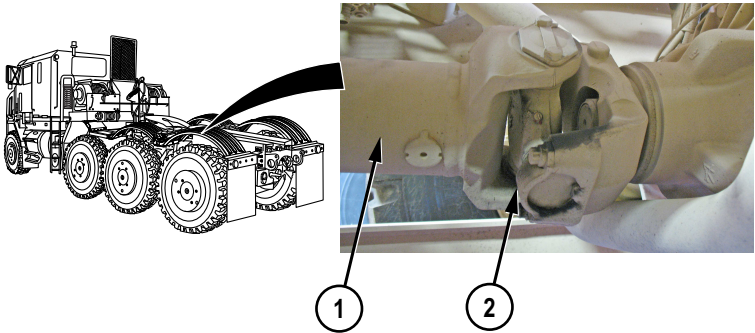
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div></div>				
			<p><b>CAUTION</b></p> <p>Do not pry on grease fittings. Damage to fittings. Damage to equipment may result.</p> <p><b>NOTE</b></p> <p>To check universal joint play, position pry bar between yoke and propeller shaft. Apply pressure to pry bar and look for movement in universal joint.</p> <ol style="list-style-type: none"><li>2. Check universal joints (2) for bearing play.</li><li>3. Complete the following when lubricating the spline end of the propeller shafts:</li></ol>	<p>Bearing play is found. Contact field level maintenance.</p>

Table 1. PMCS - SEMIANNUAL - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>a. Apply GAA (WP 0124, Table 8) to spline fitting until lubricant appears at pressure relief hole.</p>	
<div><p><b>LUBE FITTING</b></p><p><b>SPLINE FITTING</b></p><p><b>LUBE FITTINGS LOCATED ON EACH END OF SHAFT</b></p></div>				
			<p>b. Cover pressure relief hole with finger and continue adding grease until it appears at sleeve yoke seal.</p>	<p>Fitting will not purge old lubricant out of component (contact field level)</p>

Figure 3. Spline Fitting.

Table 1. PMCS - SEMIANNUAL - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				main- tenance).
3	Semiann ual	Steering System	1. Lubricate steering column with GAA. (WP 0124, Table 8)	Damage or wear present. Fit- ting will not purge old lu- bricant out of compo- nent (con- tact field level main- tenance).

Table 1. PMCS - SEMIANNUAL - Continued

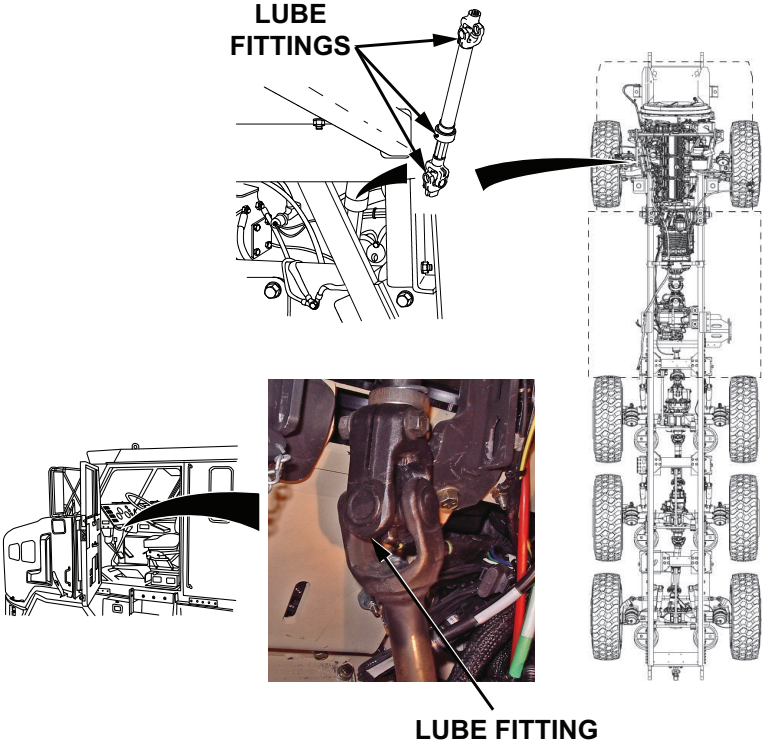
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<div><p><b>LUBE FITTINGS</b></p><p><b>LUBE FITTING</b></p></div>	
			<div>2. Lubricate top steering shaft (3 fittings) with GAA. (WP 0124, Table 8)</div>	<div>Fitting will not purge old lubricant out of component (contact field level maintenance).</div>

Figure 4. Steering System.

Table 1. PMCS - SEMIANNUAL - Continued

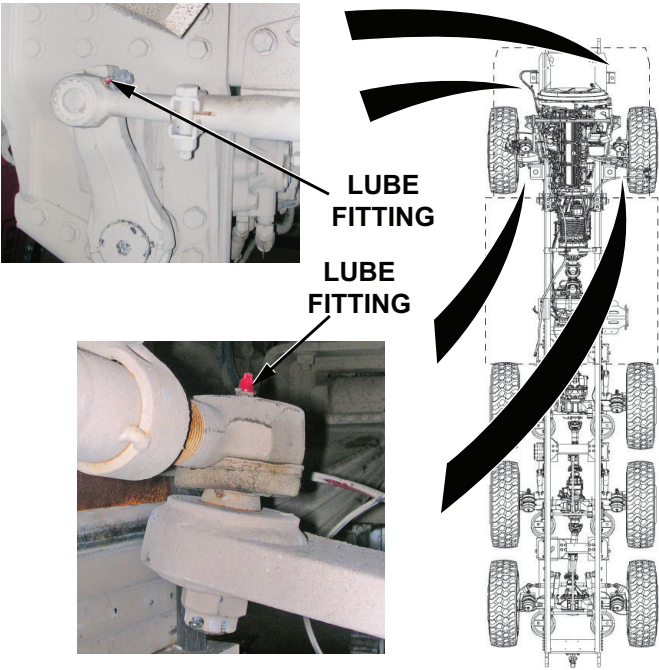
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			3. Lubricate No. 1 axle driver side and passenger side steering drag links (2 fittings each) with GAA (WP 0124, Table 8).	Fitting will not purge old lubricant out of component (contact field level maintenance).
<div></div>				
			4. Lubricate front steering shaft (3 fittings) with GAA. (WP 0124, Table 8)	Fitting will not purge old lubricant

Figure 5. Steering Drag Links.

Table 1. PMCS - SEMIANNUAL - Continued

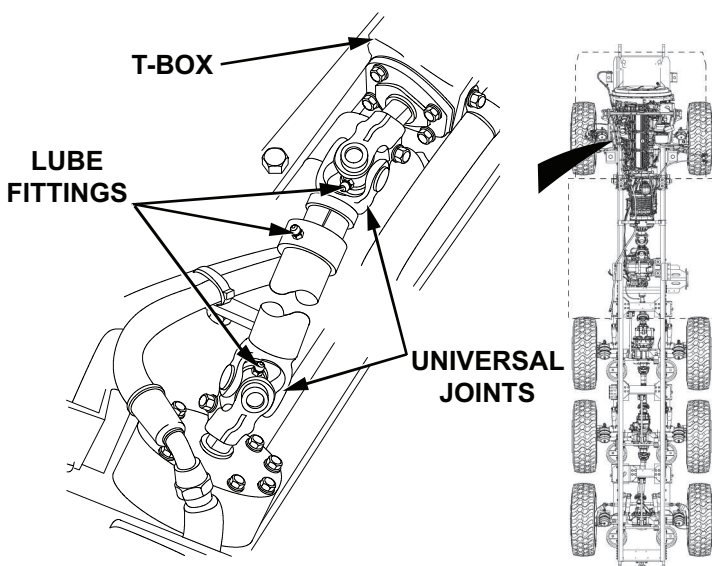
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 <p>The diagram consists of two parts. On the left is a detailed view of the front steering shaft assembly. It shows a vertical shaft with several universal joints and lube fittings. Labels with arrows point to the 'T-BOX' at the top, 'LUBE FITTINGS' in the middle, and 'UNIVERSAL JOINTS' at the bottom. On the right is a side-view schematic of a vehicle chassis, showing the front axle and steering components. An arrow points from the chassis view to the detailed assembly view on the left.</p>	out of component (contact field level maintenance).
			5. Lubricate axle link kits and universal joints with GAA. (WP 0124, Table 8)	Fitting will not purge old lubricant out of component (contact field level maintenance).

Figure 6. Front Steering Shaft.

Table 1. PMCS - SEMIANNUAL - Continued

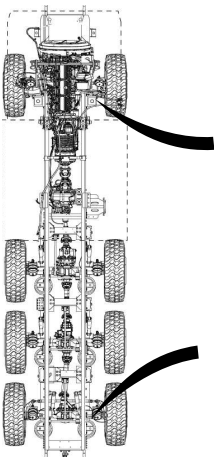
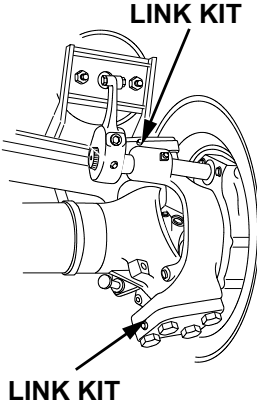
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				
			6. Lubricate rear steering shafts/universal joints No. 1 (3 fittings), No. 3 (1 fitting), No. 4 (3 fittings), and No. 5 (3 fittings) with GAA. (WP 0124, Table 8)	Fitting will not purge old lubricant out of component (contact field level maintenance).

Figure 7. Axle Link Kit.



Table 1. PMCS - SEMIANNUAL - Continued

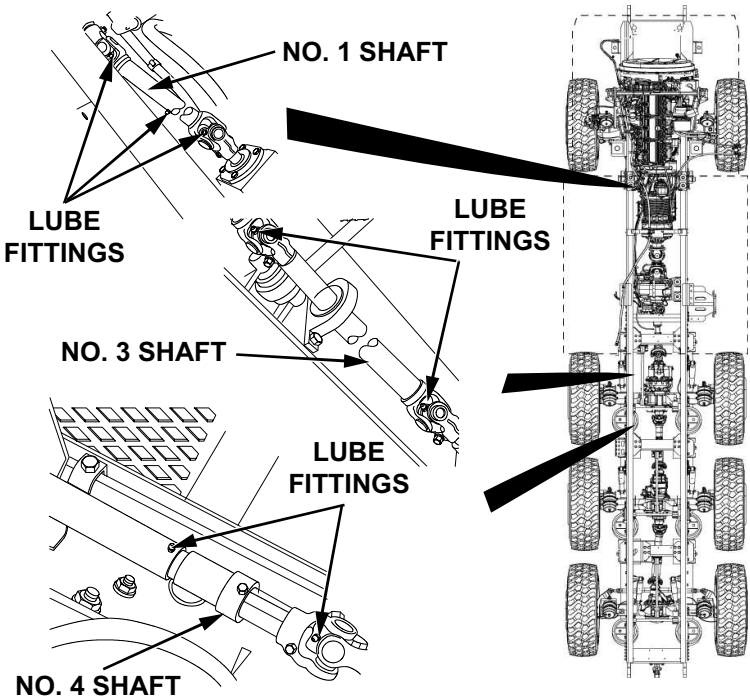
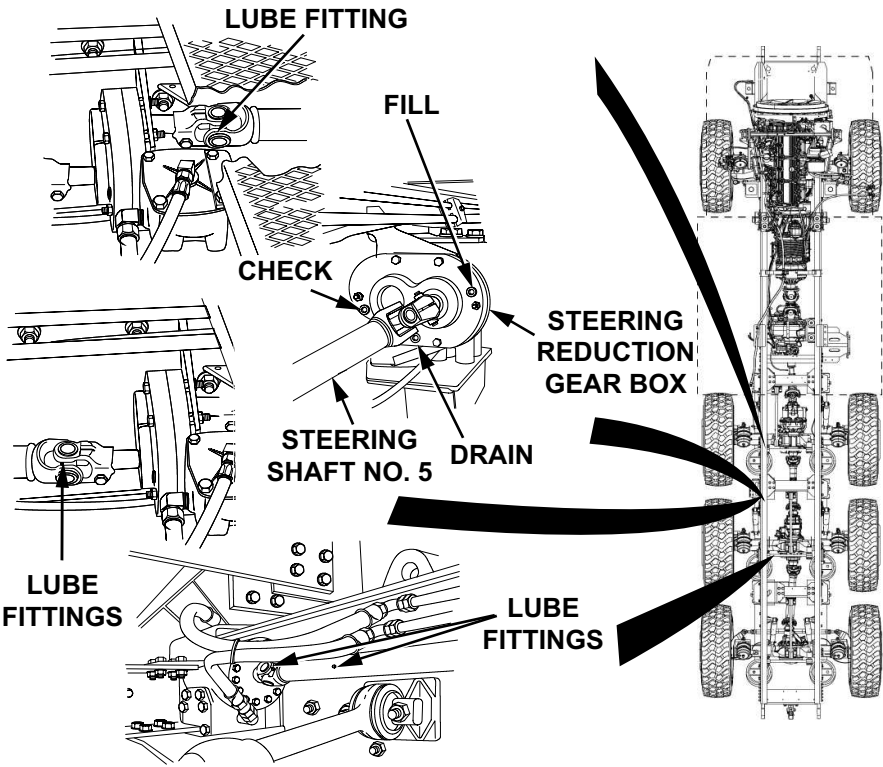
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div><p>The diagram illustrates the rear steering shaft assembly. On the left, detailed views of the shafts are shown with callouts for 'NO. 1 SHAFT', 'NO. 3 SHAFT', and 'NO. 4 SHAFT'. Arrows point to 'LUBE FITTINGS' on these shafts. On the right, a chassis view shows the location of these shafts within the vehicle's frame, with arrows pointing to the corresponding components.</p></div>				

Figure 8. Rear Steering Shafts.

Table 1. PMCS - SEMIANNUAL - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				
			7. Lubricate No. 4 axle drag link (2 fittings) with GAA. (WP 0124, Table 8)	Fitting will not purge old lubricant out of component (contact field level maintenance).

**Table 1. PMCS - SEMIANNUAL - Continued**

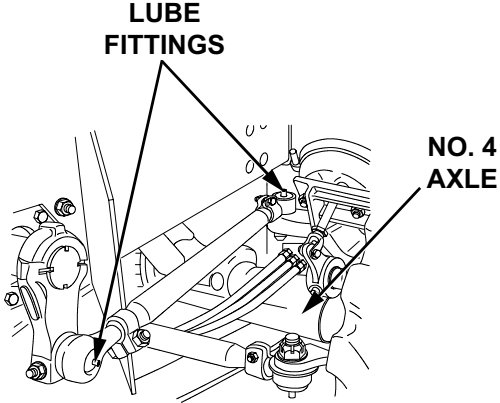
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div>  </div> <p><i>Figure 10. Rear Axle Drag Link.</i></p>				
4	Semiannual	Axles	<ol style="list-style-type: none"> <li>1. Check/fill wheel ends with Oil, Engine/ Hydraulic Oil (OE/ HDO). (WP 0124, Table 3)</li> <li>2. Lubricate axle No. 3 output shaft bearings with GAA. (WP 0124, Table 3)</li> </ol>	Fitting will not purge old lubricant out of component (contact field level maintenance).

Table 1. PMCS - SEMIANNUAL - Continued

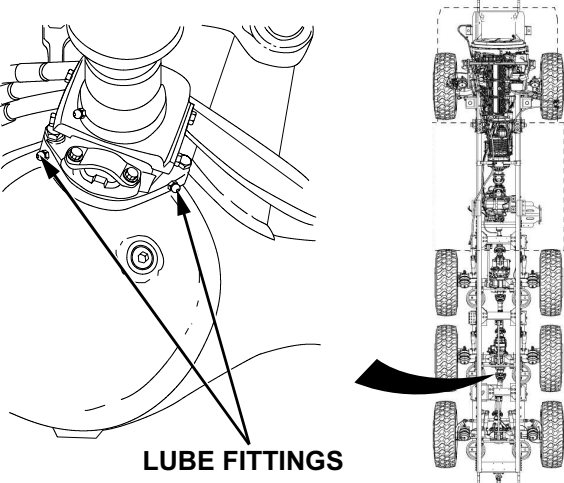
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
 <p style="text-align: center;"><b>LUBE FITTINGS</b></p> <p style="text-align: center;"><i>Figure 11. Output Shaft Bearings.</i></p>				
5	Semiannual	Front Suspension	<ol style="list-style-type: none"> <li>1. Lubricate spring link tube (1 fitting per pivot) with GAA. (WP 0124, Table 8)</li> </ol>	Fitting will not purge old lubricant out of component (contact field level maintenance).

Table 1. PMCS - SEMIANNUAL - Continued

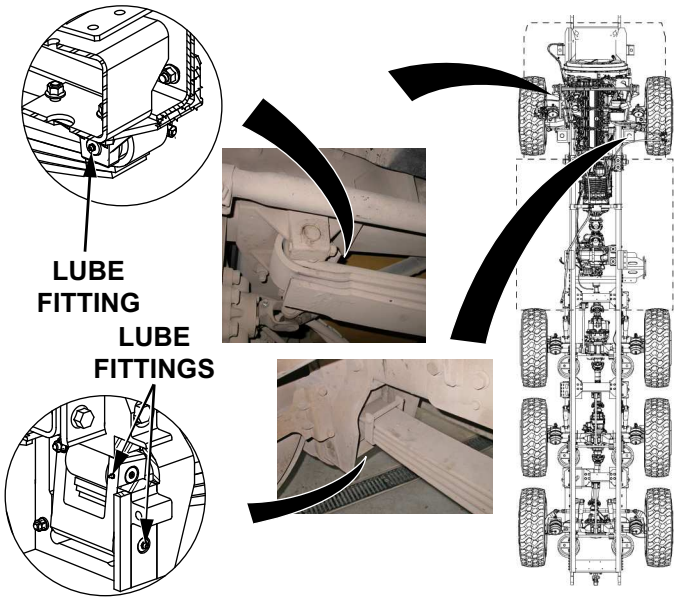
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div></div>				
			<div><div>2. Lubricate spring hanger tube (2 fittings per pivot) with GAA. (WP 0124, Table 8)</div></div>	Fitting will not purge old lubricant out of component (contact field level maintenance).
6	Semiannual	Battery Electrical System	<div><div>1. Coat slave receptacle with corrosion preventive compound.</div></div>	

Table 1. PMCS - SEMIANNUAL - Continued

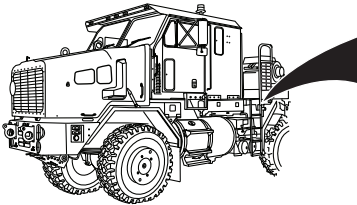

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div><div></div><div></div><div>SLAVE RECEPTACLE</div></div> <p>Figure 13. Slave Receptacle.</p>				
7	Semiannual	Oil Can Points/ Antenna Mast	1. Open hood (1) and check that fasteners, hood hinges (2), grille (3), and latches (4) are in place and serviceable.	Fasteners, hood hinges, or latches are broken.

Table 1. PMCS - SEMIANNUAL - Continued

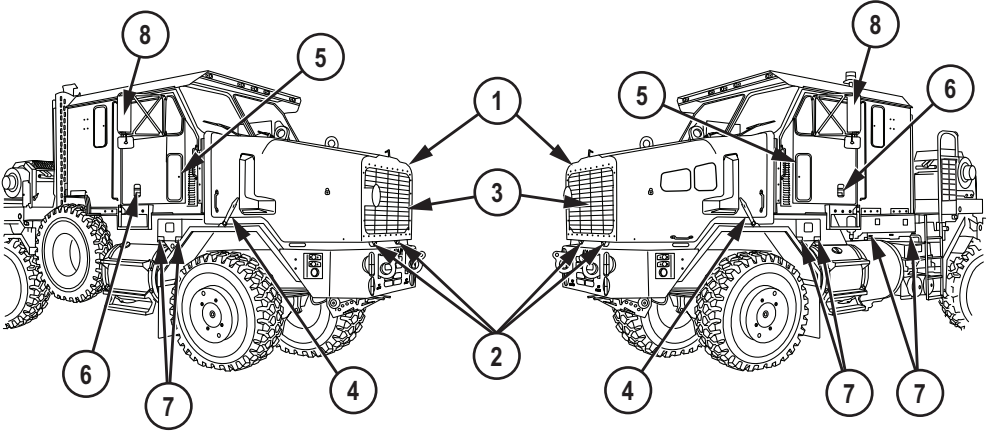
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				
			<ol style="list-style-type: none"> <li>Inspect hood (1) fiberglass.</li> <li>Check driver side and passenger side cab door hinges (5) for damage and loose or missing mounting hardware.</li> <li>Lubricate cab door hinges (5) and latching mechanisms (6) with Oil, Engine/Hydraulic Oil (OE/HDO). (WP 0124, Table 7)</li> <li>Lubricate hood hinges (2) and stowage box hinges (7) with OE/</li> </ol>	Hood fiberglass un-serviceable.

Figure 14. Oil Can Points.

Table 1. PMCS - SEMIANNUAL - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>HDO. (WP 0124, Table 7)</p> <p>6. Close hood.</p> <p>7. Lubricate driver side and passenger side mirror assembly (8) swivel joints with GAA. (WP 0124, Table 8)</p> <p><b>NOTE</b></p> <p>Not all HET Tractors are equipped with antenna masts.</p> <p>8. Check antenna mast (if installed) for obvious damage and loose or missing hardware.</p> <p>9. Check axle No. 2 driver side rear fender for cracks and loose or missing mounting hardware.</p> <p>10. Check axle No. 2 passenger side fender for cracks and loose or missing mounting hardware.</p>	
8	Semiannual	Fifth Wheel	<p>1. Lubricate locking linkage, springs, and pivot points with OE/ HDO. (WP 0124, Table 8)</p>	



Table 1. PMCS - SEMIANNUAL - Continued

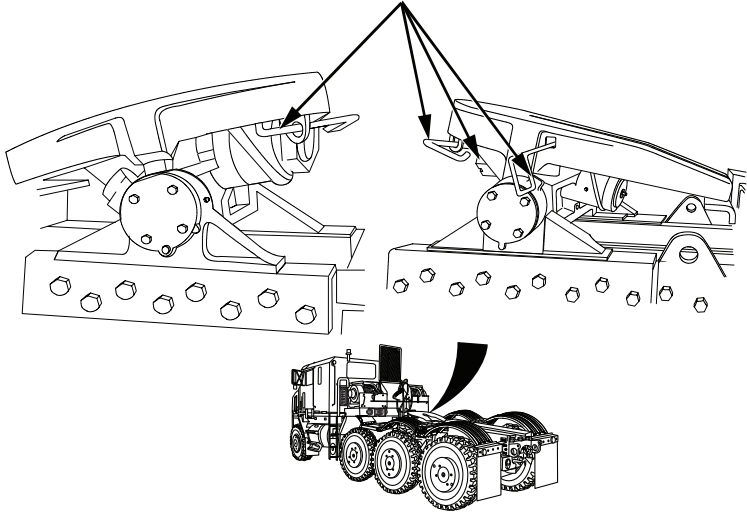
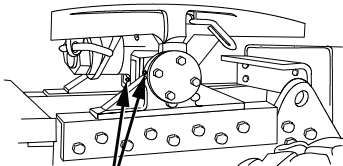
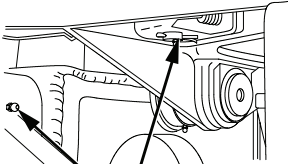
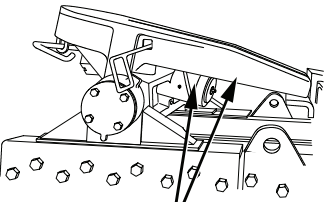
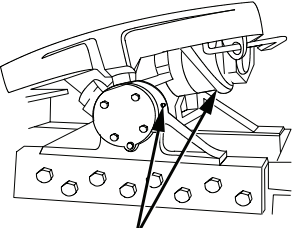
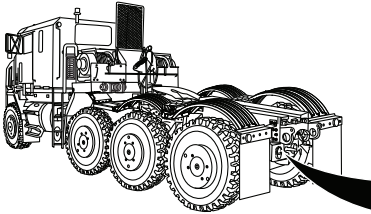
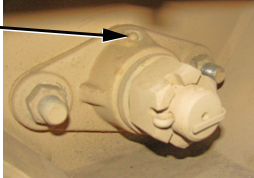
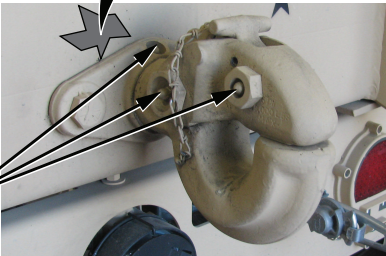
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
		<p>LUBRICATE ALL PIVOT POINTS, SPRINGS, AND LOCKING LINKAGE</p> 		
			2. Lubricate fifth wheel (8 fittings) with GAA. (WP 0124, Table 8)	Fitting will not purge old lubricant out of component (contact field level maintenance).

Figure 15. Lubricate Fifth Wheel Locking Linkage, Springs, and Pivot Points.

Table 1. PMCS - SEMIANNUAL - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div><div><p>LUBE FITTINGS</p></div><div><p>LUBE FITTINGS</p></div><div><p>LUBE FITTINGS</p></div><div><p>LUBE FITTINGS</p></div></div> <p>Figure 16. Fifth Wheel Lubrication Fittings.</p>				
9	Semiannual	Pintle Hook	1. Lubricate pintle hook (4 fittings - one inside rear crossmember) with GAA. (WP 0124, Table 8)	Fitting will not purge old lubricant out of component (contact field level maintenance).

**Table 1. PMCS - SEMIANNUAL - Continued**

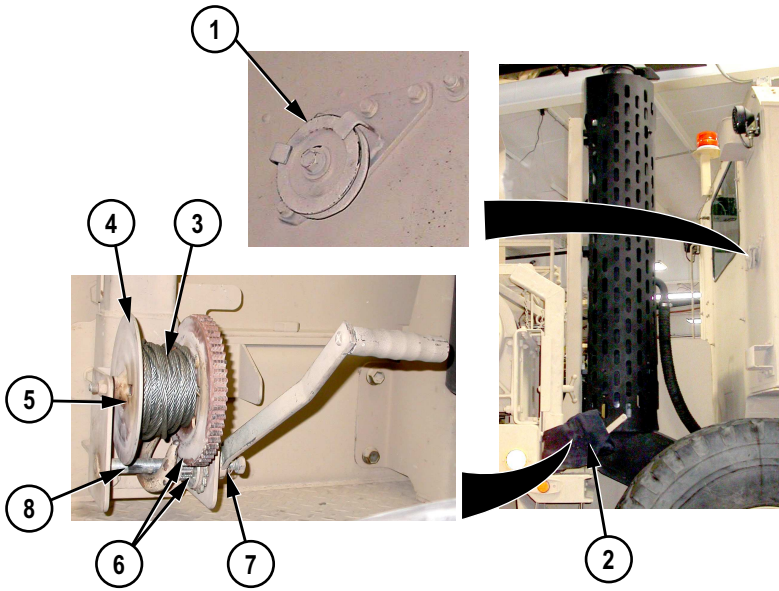
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> <p><b>LUBE FITTINGS</b></p>  <p><b>LUBE FITTINGS</b></p>  </div> </div> <p style="text-align: center;"><i>Figure 17. Pintle Hook</i></p>				
10	Semiannual	Main Winches	<ol style="list-style-type: none"> <li>1. Check main winches gear boxes oil levels, add Gear Oil (GO) (WP 0124, Table 6) as needed.</li> </ol>	



**Table 1. PMCS - SEMIANNUAL - Continued**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
<div> </div> <p><i>Figure 19. Winch Cable Hold Down.</i></p>				
11	Semiannual	Spare Tire Davit	1. Lubricate pulley (1) with OE/HDO. (WP 0124, Table 8)	

Table 1. PMCS - SEMIANNUAL - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<div>2. Remove reel cover (2).</div> <div>3. Remove davit assembly and lubricate mounting screw with GAA. (WP 0124)</div> <div>4. Check spare tire davit winch cable (3) for kinks, frays, and breaks.</div> <div>5. Lubricate spare tire davit winch cable (3) with OE/HDO. (WP 0124, Table 7)</div>	Spare tire davit winch cable is unserviceable.

**Table 1. PMCS - SEMIANNUAL - Continued**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			6. Lubricate reel (4) and reel shaft (5) with OE/HDO. (WP 0124, Table 7)  7. Lubricate reel and ratchet gears (6) with OE/HDO. (WP 0124, Table 7)  8. Lubricate crank bushings (7) and ratchet shaft (8) with OE/HDO. (WP 0124, Table 7)  9. Replace reel cover (2).	
12	Semiannual	Seats and Seat Belts	1. Check front and rear seats:  a. Check front and rear seats for loose or missing mounting hardware.  b. Check front and rear seats for tears, frays, or holes.  <b>NOTE</b> Front and rear seat belts are similar. Driver side front seat belt shown.	Loose or missing seat mounting hardware found.  Damage sufficient to impair operation.

Table 1. PMCS - SEMIANNUAL - Continued

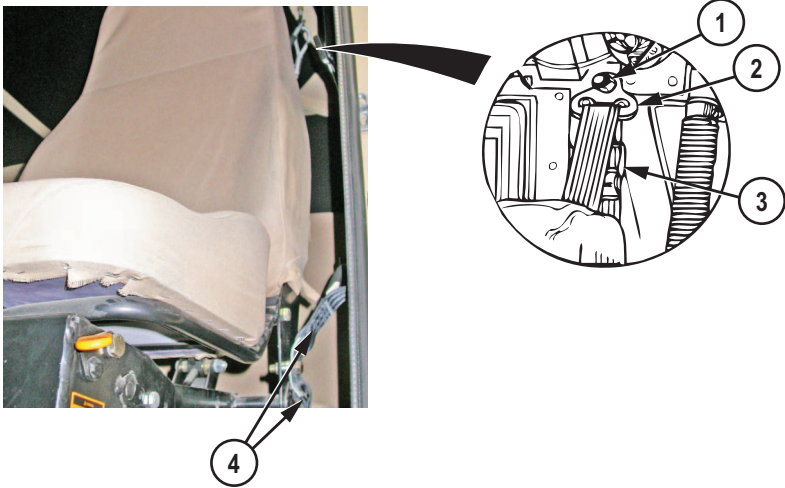
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<div>2. Check front and rear seat belts:<div>a. Check for missing, loose, corroded, or damaged seat belt mounting hardware (1).</div></div>	<div>Hardware is missing, loose, rusted, corroded, or damaged.</div>
			<div></div>	
			<div>b. Check D-loop (2) for free rotation, deformation, cracks or damage.</div>	<div>D-loop does not rotate freely. D-loop has deformities, cracks, or damage.</div>

Figure 21. Seat Belts.



Table 1. PMCS - SEMIANNUAL - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			c. Check comfort latch (3) for proper operation, cracks and damage.	Comfort latch binds. Comfort latch has cracks or damage.
			d. Check tethers (4) for proper attachment to seat.	Tethers not properly attached.

END OF TASK

END OF WORK PACKAGE



## **CHAPTER 5**

### **MAINTENANCE INSTRUCTIONS**



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## OPERATOR MAINTENANCE LUBRICATION INSTRUCTIONS

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### INITIAL SETUP:

#### References

FM 9-207 (WP 0136)

#### References (cont.)

TB 750-651 (WP 0136)

TM 750-254 (WP 0136)

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### NOTE

- The lowest level of maintenance authorized to lubricate a specific point is indicated by where that lubrication point falls within the Preventative Maintenance Checks and Services (PMCS) tables. Operator/crew are only authorized to lubricate those points within the operator PMCS tables. Field level maintenance personnel are authorized to lubricate all points regardless of which tables (operator or field level) those lubrication points are listed.
- Refer to PMCS tables for specific lubrication points and localized views.
- Lubrication intervals for Heavy Equipment Transporter (HET) Tractor are for normal operating conditions. Intervals may be shortened as required for severe operating conditions.
- Clean all lubrication points with solvent cleaning compound, and allow to dry prior to servicing.
- When using a grease gun, apply lubricant to the fitting until clean lubricant squeezes out of the part being lubricated.
- Apply grease to universal joints until old grease is expelled from all edges of universal joint end cap. Wipe away excess grease.
- After a thorough high-pressure washing, lubricate all grease fittings and oil can points outside and underneath vehicle.
- If vehicle fords water obstacle, service all lubrication points below fording depth and check submerged gear boxes for presence of water.
- Ensure equipment has correct lubricants appropriate to operating environment (expected continuous temperatures). If not, remove/drain and reapply/refill equipment with appropriate lubricants for operating environment as prescribed in these lubrication instructions.

**Table 1. Engine Lubrication.**

Item	Capacities	Expected Temperatures Above +32°F (0°C)	Expected Temperatures +40 to -10°F (+4 to -23°C)	Expected Temperatures 0 to -50°F (-18 to -46°C)	Desert Conditions	Interval
Engine Oil	38 qt. (36 L)	OE/ HDO-15W /40 (WP 0139, Table 1, Item 38, 39) MIL- PRF-2104	OE/ HDO-15W /40 (WP 0139, Table 1, Item 38, 39) MIL- PRF-2104  or  OEA (WP 0139, Table 1, Item 30, 31)  MIL- PRF-4616 7  (Notes 1 and 2)	OE/ HDO-15W /40 (WP 0139, Table 1, Item 38, 39) MIL- PRF-2104  or  OEA (WP 0139, Table 1, Item 30, 31)  MIL- PRF-4616 7  (Notes 1 and 2)	OE/ HDO-40 (WP 0139, Table 1, Item 40) MIL- PRF-2104	P-Periodic (1 year, 12, 000 miles (19 308 km) or 500 service hours, whichever comes first)

**NOTE**

1. OEA must be used when temperatures are consistently below 0°F (-18°C).
2. OE/HDO-15W/40 must be used when temperatures are consistently above 0°F (-18°C).

**Table 2. Transmission and Transfer Case Lubrication.**

<b>Item</b>	<b>Capacities</b>	<b>Expected Temperatures Above +32°F (0°C)</b>	<b>Expected Temperatures +40 to -10°F (+4 to -23°C)</b>	<b>Expected Temperatures 0 to -50°F (-18 to -46°C)</b>	<b>Interval</b>
Transmission Oil	40 qt. (37.8 L)	TES-295	TES-295 (Note 1)	TES-295 (Note 1)	P-Periodic (5 years or as transmission prognostics dictate, whichever comes first)
Transfer Case	7 qt. (6.6 L)	OE/ HDO-15W-40 (WP 0139, Table 1, Item 38, 39) MIL-PRF-  2104	OE/ HDO-15W-40 (WP 0139, Table 1, Item 38, 39) MIL-PRF-  2104  or  OEA (WP 0139, Table 1, Item 30, 31)  MIL- PRF-46167  (Note 1)	OE/ HDO-15W-40 (WP 0139, Table 1, Item 38, 39) MIL-PRF-  2104  or  OEA (WP 0139, Table 1, Item 30, 31)  MIL- PRF-46167  (Note 1)	B-Biennial (2 years or 12,000 miles (19 308 km), whichever comes first)
All Other Transmission	As Required	GAA (WP 0139,	GAA (WP 0139,	GAA (WP 0139,	As Required (Note 2)

**Table 2. Transmission and Transfer Case Lubrication - Continued.**

Item	Capacities	Expected Temperatures Above +32°F (0°C)	Expected Temperatures +40 to -10°F (+4 to -23°C)	Expected Temperatures 0 to -50°F (-18 to -46°C)	Interval
and Transfer Case  Lubrication Points		Table 1, Item 20, 21, 22) MIL-PRF-10924	Table 1, Item 20, 21, 22) MIL-PRF-10924  (Note 1)	Table 1, Item 20, 21, 22) MIL-PRF-10924  (Note 1)	
<p style="text-align: center;"><b>NOTE</b></p> <p>1. Refer to (WP 0136) for arctic operation.</p> <p>2. Refer to PMCS tables for specific lubrication intervals.</p>					

**Table 3. Axle Lubrication.**

Item	Capacities	Expected Temperatures Above +32°F (0°C)	Expected Temperatures +40 to -10°F (+4 to -23°C)	Expected Temperatures 0 to -50°F (-18 to -46°C)	Interval
Axle No. 1	17 qt. (16 L)	GO-80W/90 (WP 0139, Table 1, Item 28, 29) MIL-L-2105	GO-80W/90 (WP 0139, Table 1, Item 28, 29) MIL-PRF-2105	GO-80W/90 (WP 0139, Table 1, Item 28, 29) MIL-PRF-2105	P-Periodic (2 Years or 18,000 miles (28 962 km), whichever comes first)



**Table 3. Axle Lubrication - Continued.**

<b>Item</b>	<b>Capacities</b>	<b>Expected Temperatures Above +32°F (0°C)</b>	<b>Expected Temperatures +40 to -10°F (+4 to -23°C)</b>	<b>Expected Temperatures 0 to -50°F (-18 to -46°C)</b>	<b>Interval</b>
			(Note 2)	or  GO-75 (WP 0139, Table 1, Item 26, 27)  MIL- PRF-2105  (Notes 1 and 2)	(Note 3)
Axle No. 2 (and Power Divider)	20 qt. (18.9 L)	GO-80W/90 (WP 0139, Table 1, Item 28, 29) MIL-L-2105	GO-80W/90 (WP 0139, Table 1, Item 28, 29) MIL- PRF-2105  (Note 2)	GO-80W/90 (WP 0139, Table 1, Item 28, 29) MIL- PRF-2105  or  GO-75 (WP 0139, Table 1, Item 26, 27)  MIL- PRF-2105	P-Periodic (2 Years or 18,000 miles (28 962 km), whichever comes first)  (Note 3)

**Table 3. Axle Lubrication - Continued.**

<b>Item</b>	<b>Capacities</b>	<b>Expected Temperatures Above +32°F (0°C)</b>	<b>Expected Temperatures +40 to -10°F (+4 to -23°C)</b>	<b>Expected Temperatures 0 to -50°F (-18 to -46°C)</b>	<b>Interval</b>
				(Notes 1 and 2)	
Axle No. 3 (and Power Divider)	19 qt. (17.9 L)	GO-80W/90 (WP 0139, Table 1, Item 28, 29) MIL-L-2105	GO-80W/90 (WP 0139, Table 1, Item 28, 29) MIL-PRF-2105  (Note 2)	GO-80W/90 (WP 0139, Table 1, Item 28, 29) MIL-PRF-2105  or  GO-75 (WP 0139, Table 1, Item 26, 27)  MIL-PRF-2105  (Notes 1 and 2)	P-Periodic (2 Years or 18,000 miles (28 962 km), whichever comes first)  (Note 3)
Axle No. 4	16 qt. (15.1 L)	GO-80W/90 (WP 0139, Table 1, Item 28, 29) MIL-L-2105	GO-80W/90 (WP 0139, Table 1, Item 28, 29) MIL-PRF-2105  (Note 2)	GO-80W/90 (WP 0139, Table 1, Item 28, 29) MIL-PRF-2105  or	P-Periodic (2 Years or 18,000 miles (28 962 km), whichever comes first)  (Note 3)

**Table 3. Axle Lubrication - Continued.**

<b>Item</b>	<b>Capacities</b>	<b>Expected Temperatures Above +32°F (0°C)</b>	<b>Expected Temperatures +40 to -10°F (+4 to -23°C)</b>	<b>Expected Temperatures 0 to -50°F (-18 to -46°C)</b>	<b>Interval</b>
				GO-75 (WP 0139, Table 1, Item 26, 27)  MIL- PRF-2105  (Notes 1 and 2)	
Planetary Wheel Ends	3.5 pt. (1.7 L)	GO-80W/90 (WP 0139, Table 1, Item 28, 29) MIL-L-2105	GO-80W/90 (WP 0139, Table 1, Item 28, 29) MIL- PRF-2105  (Note 2)	GO-75 (WP 0139, Table 1, Item 26, 27) MIL- PRF-2105  (Note 2)	P-Periodic (2 Years or 18,000 miles (28 962 km), whichever comes first)
All Other Axle Lubrication Points	As Required	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL- PRF-10924	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL- PRF-10924  (Note 2)	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL- PRF-10924  (Note 2)	As Required  (Note 4)

**Table 3. Axle Lubrication - Continued.**

Item	Capacities	Expected Temperatures Above +32°F (0°C)	Expected Temperatures +40 to -10°F (+4 to -23°C)	Expected Temperatures 0 to -50°F (-18 to -46°C)	Interval
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**NOTE**

1. GO-80W/90 must be used when temperatures are consistently above -15°F (-26°C).
2. Refer to (WP 0136) for arctic operation.
3. An initial lubrication change on new or rebuilt axles should occur between 500 mi. (805 km) and 1,000 miles (1 609 km). Refer to Field Level Annual PMCS for more information.
4. Refer to PMCS tables for specific lubrication intervals.

**Table 4. Hydraulic Reservoir Servicing.**

Item	Capacities	Expected Temperatures Above +32°F (0°C)	Expected Temperatures +40 to -10°F (+4 to -23°C)	Expected Temperatures 0 to -50°F (-18 to -46°C)	Interval
Hydraulic Reservoir	186 qt. (176 L)	OE/HDO-15W-40 (WP 0139, Table 1, Item 38, 39) MIL-PRF-2104	OEA (WP 0139, Table 1, Item 30, 31) MIL-PRF-46167	Radcolube RHP6083 (WP 0139, Table 1, Item 23, 24, 25) MIL-PRF-6083 (Note 1)	B-Biennial (2 years)

**Table 4. Hydraulic Reservoir Servicing - Continued.**

<b>Item</b>	<b>Capacities</b>	<b>Expected Temperatures</b> <b>Above +32°F (0°C)</b>	<b>Expected Temperatures</b> <b>+40 to -10°F</b> <b>(+4 to -23°C)</b>	<b>Expected Temperatures</b> <b>0 to -50°F</b> <b>(-18 to -46°C)</b>	<b>Interval</b>
<p style="text-align: center;"><b>NOTE</b></p> <p>1. Refer to (WP 0136) for arctic operation.</p>					

**Table 5. Radiator Servicing.**

<b>Item</b>	<b>Capacities</b>	<b>Expected Temperatures</b> <b>Above +32°F (0°C)</b>	<b>Expected Temperatures</b> <b>+40 to -10°F</b> <b>(+4 to -23°C)</b>	<b>Expected Temperatures</b> <b>0 to -50°F</b> <b>(-18 to -46°C)</b>	<b>Interval</b>
Antifreeze (CID A-A-52624)  (Note 1)	59 qt. (55.8 L)	59 qt. (55.8 L)  50% Ethylene Glycol  Type IC (Recycled)  (Notes 1 and 2)	59 qt. (55.8 L)  50% Ethylene Glycol  Type IC (Recycled)  (Notes 1 and 2)	59 qt. (55.8 L)  60% Ethylene Glycol  Arctic Type IB (Recycled)  (Notes 1, 2, and 3)	P-Periodic (2 years or 150,000 miles (241 350 km) or 3,000 service hours, whichever comes first)  (Note 4)
Antifreeze	59 qt.	29.5 qt. (27.9 L)	29.5 qt. (27.9 L)	35.4 qt. (33.5 L)	P-Periodic

**Table 5. Radiator Servicing - Continued.**

<b>Item</b>	<b>Capacities</b>	<b>Expected Tempera- tures  Above +32°F (0°C)</b>	<b>Expected Tempera- tures  +40 to -10°F  (+4 to -23°C )</b>	<b>Expected Tempera- tures  0 to -50°F  (-18 to -46°C )</b>	<b>Interval</b>
(CID A-A-52624)  (Note 1)	(55.8 L)	100% Ethylene Glycol  Type IA (Recycled)  plus  29.5 qt.  (27.9 L) water  (Notes 1 and 5)	100% Ethylene Glycol  Type IA (Recycled)  plus  29.5 qt.  (27.9 L) water  (Notes 1 and 5)	100% Ethylene Glycol  Type IA (Recycled)  plus  23.6 qt.  (22.3 L) water  (Notes 1, 3, and 7)	(2 years or 150,000 miles (241 350 km) or 3,000 service hours, whichever comes first)  (Note 4)
Antifreeze (CID A-A-52624)  (Note 1)	59 qt. (55.8 L)	29.5 qt. (27.9 L)  100% Propylene Glycol  Type IIA (virgin)  plus  29.5 qt.	29.5 qt. (27.9 L)  100% Propylene Glycol  Type IIA (virgin)  plus  29.5 qt.	35.4 qt. (33.5 L)  100% Propylene Glycol  Type IIA (virgin)  plus  23.6 qt.	P-Periodic (2 years or 150,000 miles (241 350 km) or 3,000 service hours, whichever comes first)  (Note 4)

**Table 5. Radiator Servicing - Continued.**

Item	Capacities	Expected Temperatures Above +32°F (0°C)	Expected Temperatures +40 to -10°F (+4 to -23°C)	Expected Temperatures 0 to -50°F (-18 to -46°C)	Interval
		(27.9 L) water  (Notes 1 and 6)	(27.9 L) water  (Notes 1 and 6)	(22.3 L) water  (Notes 1, 3, and 8)	

**NOTE**

1. Refer to (WP 0136) for more information on antifreeze and additives used in the HET Tractor engine cooling system, and (WP 0136) for detailed instructions for draining, cleaning, and flushing cooling systems.
2. Type 1C (normal) and Type 1B (arctic) antifreeze is premixed, and DOES NOT REQUIRE the addition of water. Never add water or inhibitor to Type 1B antifreeze.
3. Refer to (WP 0136) for arctic operation.
4. Engine coolant contaminant level is checked annually. Engine coolant does not need to be changed until it fails check.
5. A mixture of 50% Ethylene Glycol (EG) antifreeze to 50% water will provide freeze protection down to -34°F (-37°C).
6. A mixture of 50% Propylene Glycol (PG) antifreeze to 50% water will provide freeze protection down to -27°F (-33°C).
7. A mixture of 60% Ethylene Glycol (EG) antifreeze to 40% water will provide freeze protection down to -62°F (-52°C).
8. A mixture of 60% Propylene Glycol (PG) antifreeze to 40% water will provide freeze protection down to -56°F (-49°C).

**Table 6. Winch Lubrication.**

<b>Item</b>	<b>Capacities</b>	<b>Expected Temperatures Above +32°F (0°C)</b>	<b>Expected Temperatures +40 to -10°F (+4 to -23°C)</b>	<b>Expected Temperatures 0 to -50°F (-18 to -46°C)</b>	<b>Interval</b>
Main Winches Gear Box	17 qt. (16 L)	GO-85W/140 (WP 0139, Table 1, Item 41, 42) MIL-PRF-2105	GO-80W/90 (WP 0139, Table 1, Item 28, 29) MIL-PRF-2105  or  GO-75 (WP 0139, Table 1, Item 26, 27) MIL-PRF-2105 (Note 1)	GO-75 (WP 0139, Table 1, Item 26, 27) MIL-PRF-2105  (Note 1)	P-Periodic (24 months or 18,000 miles (28 962 km), whichever comes first.)
Auxiliary Winch Gear Box	4 qt. (3.8 L)	GO-85W/140 (WP 0139, Table 1, Item 41, 42) MIL-PRF-2105	GO-80W/90 (WP 0139, Table 1, Item 28, 29) MIL-PRF-2105  or	GO-75 (WP 0139, Table 1, Item 26, 27) MIL-PRF-2105  (Note 1)	P-Periodic (24 months or 18,000 miles (28 962 km), whichever comes first.)



**Table 6. Winch Lubrication - Continued.**

<b>Item</b>	<b>Capacities</b>	<b>Expected Temperatures Above +32°F (0°C)</b>	<b>Expected Temperatures +40 to -10°F (+4 to -23°C)</b>	<b>Expected Temperatures 0 to -50°F (-18 to -46°C)</b>	<b>Interval</b>
			GO-75 (WP 0139, Table 1, Item 26, 27)  MIL-PRF-  2105  (Note 1)		
Winch Cable	As Required	OE/HDO- 15W-40 (WP 0139, Table 1, Item 38, 39) MIL-PRF-  2104	OE/HDO- 15W-40 (WP 0139, Table 1, Item 38, 39) MIL-PRF-  2104  (Note 1)	OEA (WP 0139, Table 1, Item 30, 31) MIL-PRF-  46167  (Note 1)	As Required  (Note 2)
All Other Winch Lubrication Points	As Required	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	As Required  (Note 2)

**Table 6. Winch Lubrication - Continued.**

Item	Capacities	Expected Temperatures Above +32°F (0°C)	Expected Temperatures +40 to -10°F (+4 to -23°C)	Expected Temperatures 0 to -50°F (-18 to -46°C)	Interval
<p style="text-align: center;"><b>NOTE</b></p> <p>1. Refer to (WP 0136) for arctic operation. 2. Refer to PMCS tables for specific lubrication intervals.</p>					

**Table 7. Oil Can Point Lubrication.**

Capacities	Expected Temperatures Above +32°F (0°C)	Expected Temperatures +40 to -10°F (+4 to -23°C)	Expected Temperatures 0 to -50°F (-18 to -46°C)	Intervals
As Required	OE/HDO- 15W/40 (WP 0139, Table 1, Item 38, 39) MIL-L-2104	OE/HDO- 15W/40 (WP 0139, Table 1, Item 38, 39) MIL-L-2104  (Note 1)	OEA (WP 0139, Table 1, Item 30, 31) MIL-PRF-46167  (Note 1)	As Required  (Note 2)
<p style="text-align: center;"><b>NOTE</b></p> <p>1. Refer to (WP 0136) for arctic operation. 2. Refer to PMCS tables for specific oil can lubrication intervals.</p>				

**Table 8. Miscellaneous Lubrication Points.**

<b>Item</b>	<b>Capacities</b>	<b>Expected Tempera- tures  Above +32°F (0°C)</b>	<b>Expected Tempera- tures  +40 to -10°F  (+4 to -23°C )</b>	<b>Expected Tempera- tures  0 to -50°F  (-18 to -46°C )</b>	<b>Interval</b>
Propeller Shafts and U-Joints	As Required	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 3)	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Notes 1 and 3)	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Notes 1 and 3)	S- Semiannual (WP 0123) (6 Months)  (Note 2)
Link Kits (King Pin)	As Required	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	S- Semiannual (WP 0123) (6 Months)
Brake Camshafts and Slack Adjusters	As Required	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	S- Semiannual (WP 0123) (6 Months)

**Table 8. Miscellaneous Lubrication Points - Continued.**

<b>Item</b>	<b>Capacities</b>	<b>Expected Tempera- tures  Above +32°F (0°C)</b>	<b>Expected Tempera- tures  +40 to -10°F  (+4 to -23°C )</b>	<b>Expected Tempera- tures  0 to -50°F  (-18 to -46°C )</b>	<b>Interval</b>
Pintle Hook	As Required	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	S- Semiannual (WP 0123) (6 Months)  (service fittings)
Steering System	As Required	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	S- Semiannual (WP 0123) (6 Months)
Spare Tire Davit	As Required	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	S- Semiannual (WP 0123) (6 Months)
Fifth Wheel Plate/Ramps	As Required	GAA (WP 0139,	GAA (WP 0139,	GAA (WP 0139,	W-Weekly (WP 0121)

**Table 8. Miscellaneous Lubrication Points - Continued.**

Item	Capacities	Expected Temperatures Above +32°F (0°C)	Expected Temperatures +40 to -10°F (+4 to -23°C)	Expected Temperatures 0 to -50°F (-18 to -46°C)	Interval
		Table 1, Item 20, 21, 22) MIL-PRF-  10924	Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	
Fifth Wheel Lubrication Fittings	As Required	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	S- Semiannual (WP 0123) (6 Months)
Tie Rod Ends	As Required	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	GAA (WP 0139, Table 1, Item 20, 21, 22) MIL-PRF-  10924  (Note 1)	S- Semiannual (WP 0123) (6 Months)

**NOTE**

1. Refer to (WP 0136) for arctic operation.
2. When vehicle is operating under severe conditions, lubricate propeller shafts and universal joints every 50 hours of vehicle operation.

**Table 8. Miscellaneous Lubrication Points - Continued.**

Item	Capacities	Expected Temperatures Above +32°F (0°C)	Expected Temperatures +40 to -10°F (+4 to -23°C)	Expected Temperatures 0 to -50°F (-18 to -46°C)	Interval
3. Apply grease until old grease is expelled from all edges of universal joint end cap. Wipe away excess grease.					

**Table 9. Vehicle Cleaning.**

Item	Capacities	Expected Temperature	Intervals
Cleaning Compound, Solvent (WP 0139, Table 1, Item 7, 8, 9, 10, 11, 12)	As Required	SD All Temperatures (Note 2)	As Required (Note 1)
<p style="text-align: center;"><b>NOTE</b></p> <p>1. After a thorough high-pressure washing, lubricate all grease fittings and oil can points outside and underneath vehicle.</p> <p>2. Refer to (WP 0136) for arctic operation.</p>			

**Table 10. Miscellaneous Capacities.**

Item	Capacities	Expected Temperature	Intervals
Fuel Tank No. 1	150 gal (568 L)	All Temperatures	As Required
Fuel Tank No. 2	100 gal (379 L)	All Temperatures	As Required

**Table 10. Miscellaneous Capacities - Continued.**

Item	Capacities	Expected Temperature	Intervals
Windshield Washer Fluid	3 qt (2.8 L)	All Temperatures	As Required

**END OF WORK PACKAGE**





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## OPERATOR MAINTENANCE HEAVY EQUIPMENT TRANSPORTER (HET) TRACTOR CLEANING INSTRUCTIONS

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### INITIAL SETUP:

#### Materials/Parts

Rags, Wiping (WP 0139, Table 1, Item 44)

#### Equipment Condition

Engine OFF. (WP 0050)  
Wheels chocked. (WP 0036)

---

### CLEAN HET TRACTOR EXTERIOR

#### CAUTION

Do not wipe dirt off HET Tractor when HET Tractor is dry. Dirt, stones, or debris may scratch and damage HET Tractor.

#### NOTE

After a thorough high-pressure washing, lubricate all grease fittings and oil can points outside and underneath HET Tractor (refer to lubrication Instructions (WP 0124) for more information).

1. Wash HET Tractor frequently with cool or warm water. Do not use strong detergent or abrasives.
2. While cleaning HET Tractor, look closely for rust, corrosion, bare metal, or other damage. Report any damage to field level maintenance.

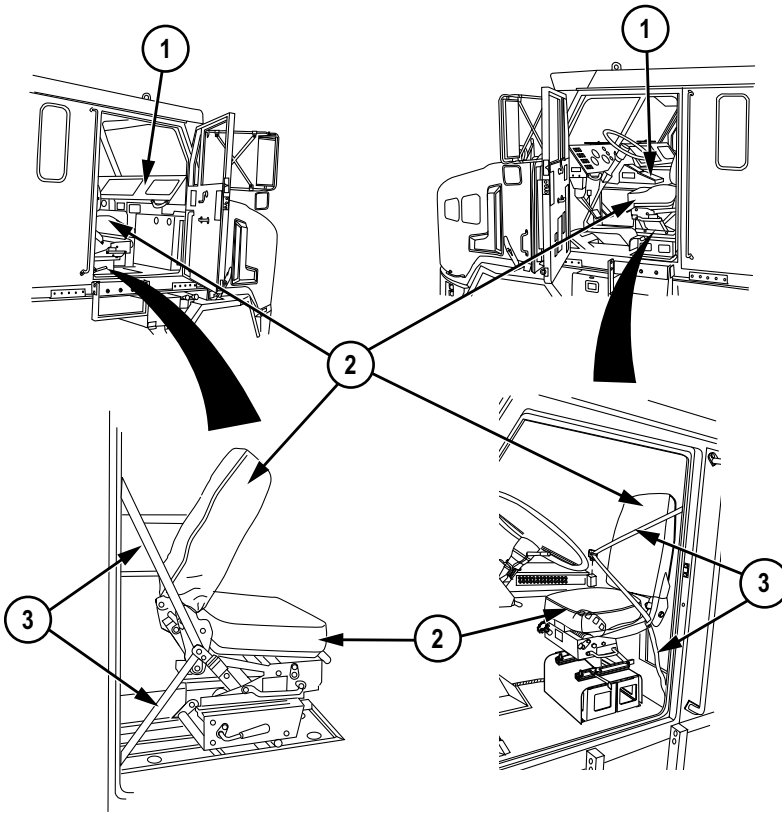
### END OF TASK

### CLEAN HET TRACTOR INTERIOR

#### CAUTION

Throttle pedal (WP 0013), instrument panels/gauges, cab heat controls (WP 0017), and vehicle electrical center have electrical components. Do not get water on these parts. Damage to electrical components may result.

1. Remove loose dirt and dust from cab interior components (1).

**CLEAN HET TRACTOR INTERIOR - Continued***Figure 1.*

2. Clean seat cushions (2), seat belts (3), and shoulder harnesses with warm soapy water. Do not use abrasives or solvents.
3. Wipe seat cushions (2) and seat belts (3) dry.

**END OF TASK****END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE CHANGING FLAT TIRE/WHEEL ASSEMBLY

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### INITIAL SETUP:

#### Tools and Special Tools

Adapter (WP 0137, Table 3, Item 1)  
Extension, Wrench (WP 0137, Table 3, Item 17)  
Gloves, Leather (WP 0138, Table 2)  
Handle, Extension (WP 0137, Table 3, Item 21)  
Handle, Sliding, 3/4 in. Square Drive (WP 0137, Table 3, Item 24)  
Hose Assembly, Air (WP 0137, Table 3, Item 26)  
Hydraulic Jack, 12T. Telescopic (WP 0137, Table 3, Item 27)  
Plate, Jack (WP 0137, Table 3, Item 31)  
Socket, Impact, 1 1/2 in. (WP 0137, Table 3, Item 39)  
Socket, Impact, 33 mm (WP 0137, Table 3, Item 40)  
Wrench, Adjustable, 8 in. (WP 0137, Table 3, Item 46)  
Wrench, Air Powered (WP 0137, Table 3, Item 48)

#### Tools and Special Tools (cont.)

Wrench, Open-End (WP 0137, Table 3, Item 49)  
Wrench, Tube, 3/4 in. (WP 0137, Table 3, Item 50)

#### Materials/Parts

Rags, Wiping (WP 0139, Table 1, Item 44)

#### Personnel Required

Operator and Assistant - - - (2)

#### Equipment Condition

CTIS shut off. (WP 0052)  
Shut off engine. (WP 0050)  
Parking brake applied. (WP 0049)  
Wheels chocked (wheel opposite flat tire). (WP 0036)  
Highway emergency marker kit set up. (WP 0078)

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### HEAVY EQUIPMENT TRANSPORTER (HET) TRACTOR PREPARATION

#### WARNING

Park Heavy Equipment Transporter (HET) Tractor in safe area, out of traffic, where there is no danger to personnel changing tire assembly. Park HET Tractor on hard, level surface where jacks will have a stable surface. Attempting to change the tire assembly on unlevel or soft surface may result in HET Tractor falling. Failure to comply may result in serious injury or death to personnel.

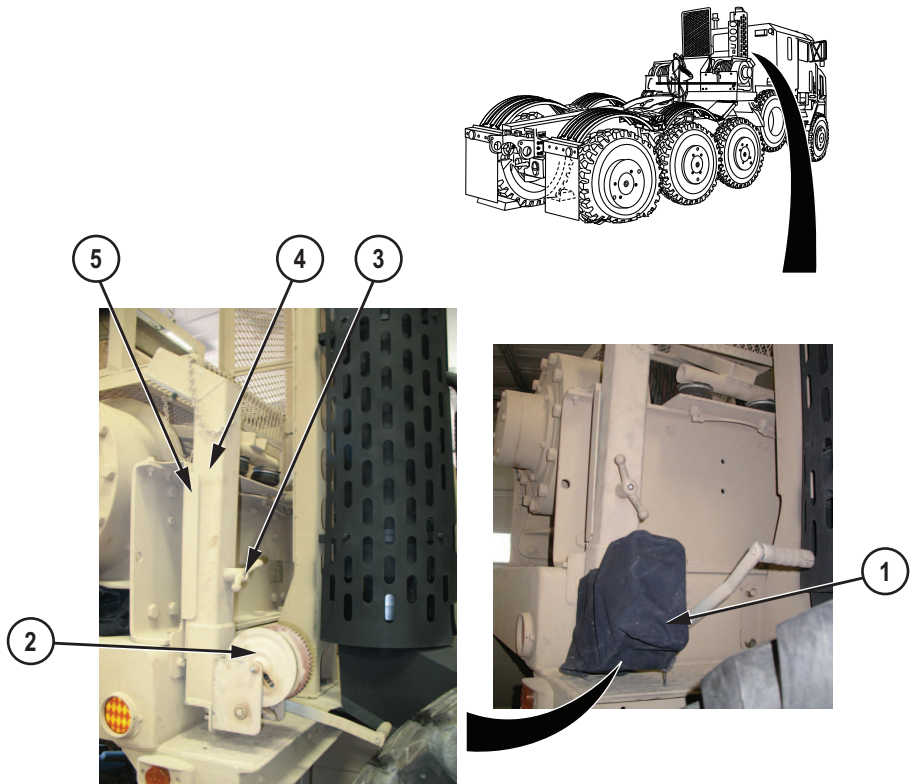
**HEAVY EQUIPMENT TRANSPORTER (HET) TRACTOR PREPARATION - Continued****WARNING**

Tire assembly weighs 523 lb (237 kg). Do not try to lift or catch tire assembly. Failure to comply may result in serious injury or death to personnel.

**WARNING**

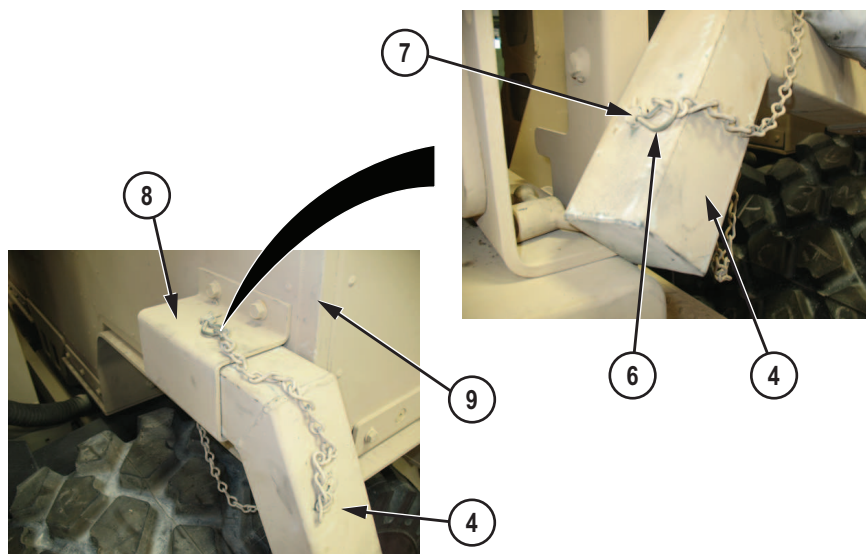
The two piece handle supplied with the hydraulic jack must not be used. Only use the 40 in. (102 cm) extension handle to operate the jack. Failure to comply may result in serious injury or death to personnel.

1. Remove cover (1) from tire lift winch (2).

**HEAVY EQUIPMENT TRANSPORTER (HET) TRACTOR PREPARATION - Continued**

*Figure 1. HET Tractor Preparation.*

2. Remove T-handle (3) and tire lift arm (4) from stowage bracket (5).
3. Remove safety pin (6) from pin (7).
4. Remove pin (7) from tire lift arm (4).

**HEAVY EQUIPMENT TRANSPORTER (HET) TRACTOR PREPARATION - Continued**

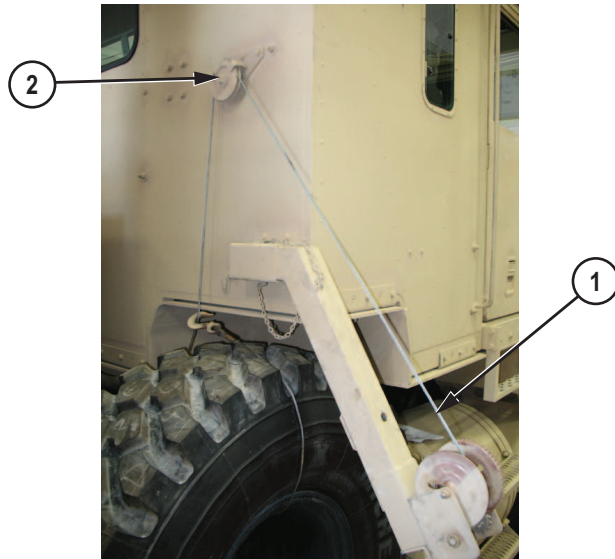
*Figure 2. HET Tractor Preparation.*

5. Insert tire lift arm (4) in spare tire lifting bracket (8) on rear of cab (9) and align holes.
6. Insert pin (7) through holes.
7. Insert safety pin (6) through pin (7).

**END OF TASK****SPARE TIRE REMOVAL****WARNING**

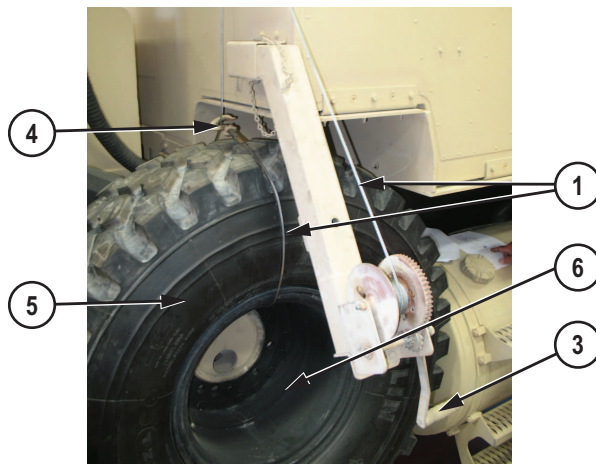
Always wear heavy gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in serious injury or death to personnel.

1. Feed out enough cable (1) to reach around pulley (2).

**SPARE TIRE REMOVAL - Continued**

*Figure 3. Spare Tire Removal.*

2. Route cable (1) around pulley (2).
3. Turn handcrank (3) to reel out enough cable (1) to route hook (4) through, and around spare tire assembly (5).



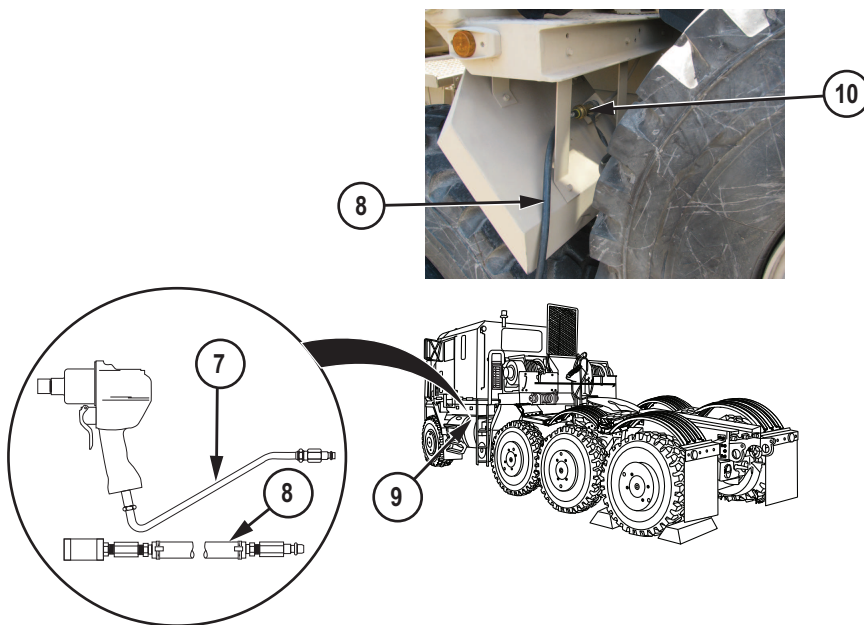
*Figure 4. Spare Tire Removal.*

**SPARE TIRE REMOVAL - Continued**

4. Push hook (4) through wheel (6). Wrap cable (1) once around spare tire assembly (5).
5. Secure hook (4) to cable (1) at top of spare tire assembly (5).
6. Turn handcrank (3) to take up slack until light tension is felt on cable (1).

**NOTE**

- If air wrench is used, HET Tractor air system will be depleted. If air wrench is used, start engine and run engine with HIGH IDLE switch in up (on) position to provide air to components. If air wrench is to be used, perform Steps (7) through (9). If air wrench is not used, skip to Step (10).
  - If engine is started to provide air pressure during tire changes, CTIS on/off switch must be in up (off) position.
7. Remove air wrench (7) and air hose (8) from stowage box (9).



*Figure 5. Spare Tire Removal.*

8. Install air hose (8) on pneumatic air chuck (10).
9. Install air hose (8) on air wrench (7).



**SPARE TIRE REMOVAL - Continued****WARNING**

Cable must be secure and taut around spare tire assembly before removing screws. Failure to comply may result in serious injury or death to personnel.

10. Using 33 mm socket, remove three screws (11) from spare tire assembly (5) and spare tire mounting bracket (12).

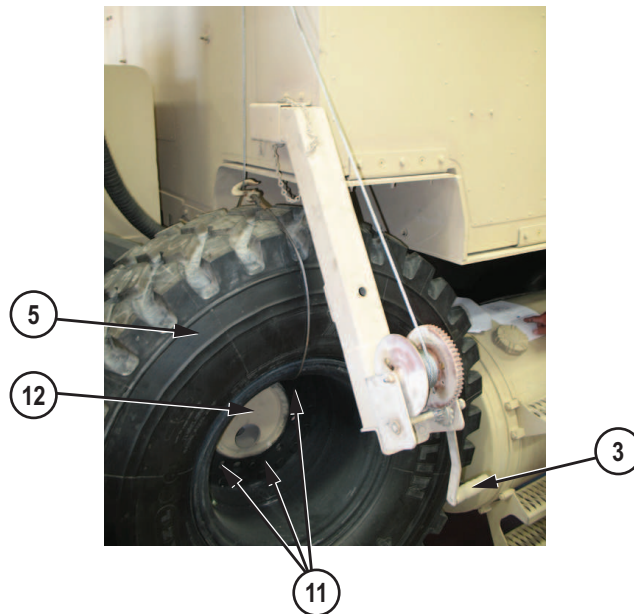


Figure 6. Spare Tire Removal.

**WARNING**

Tire assembly weighs 523 lb (237 kg). Place tire on carrier or on ground as soon as possible. Failure to comply may result in serious injury or death to personnel.

**SPARE TIRE REMOVAL - Continued****WARNING**

Always wear heavy gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in serious injury or death to personnel.

**CAUTION**

Use care when lowering spare tire assembly. Failure to comply may result in damage to equipment.

11. Turn handcrank (3) to lift spare tire assembly (5) just above spare tire mounting bracket (12).
12. With the aid of an assistant pulling spare tire assembly (5) away from spare tire mounting bracket (12), turn handcrank (3) to lower spare tire assembly (5) to ground.

**WARNING**

Do not remove cable at this time. Tire could fall over. Failure to comply may result in serious injury or death to personnel.

13. With the aid of an assistant, lean spare tire assembly (5) against HET Tractor.

**END OF TASK****FLAT TIRE REMOVAL****WARNING**

Never go under equipment when supported only by jack. Keep clear of equipment when raising or lowering. Failure to comply may result in serious injury or death to personnel.

**WARNING**

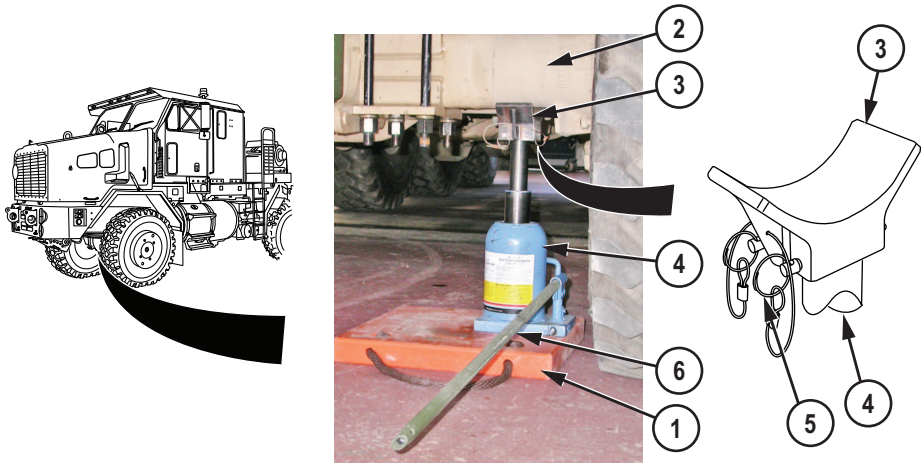
Never go under Heavy Equipment Transporter (HET) Tractor with engine running. HET Tractor may move unexpectedly. Failure to comply may result in serious injury or death to personnel.

**NOTE**

If changing a wheel/tire assembly on the front axle, start at Step (1). If changing a wheel/tire assembly on one of the rear axles, start at Step (6).

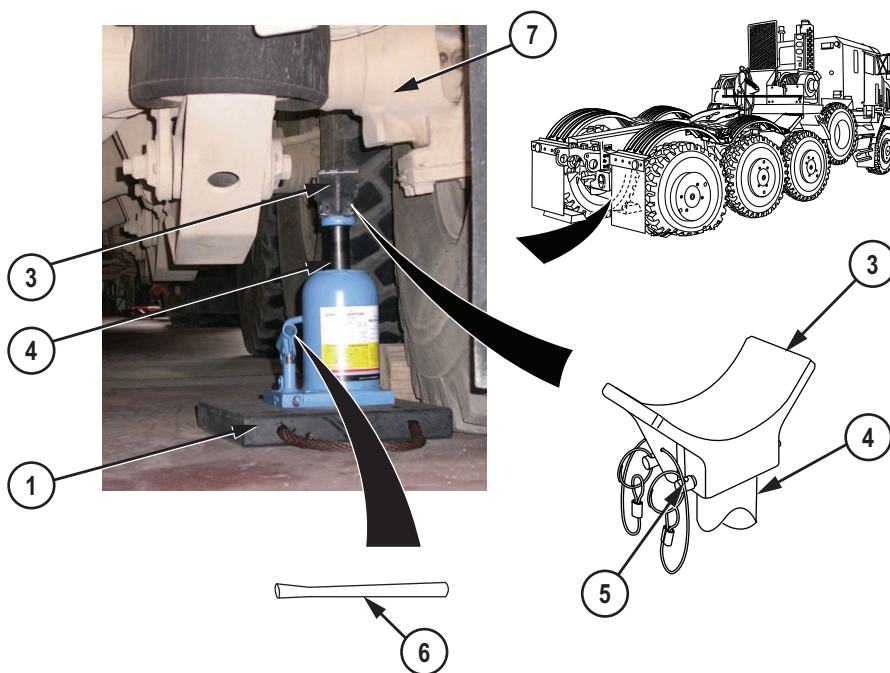
**FLAT TIRE REMOVAL - Continued**

1. Position jack plate (1) under front axle (2).



*Figure 7. Flat Tire Removal.*

2. Install saddle adapter (3) on jack (4) with two locking pins (5).
3. Position jack (4) under front axle (2).
4. Use extension handle (6) to raise jack (4) until saddle adapter (3) contacts front axle (2).
5. Proceed to Step (9).
6. Position jack plate (1) under rear axle housing (7).

**FLAT TIRE REMOVAL - Continued**

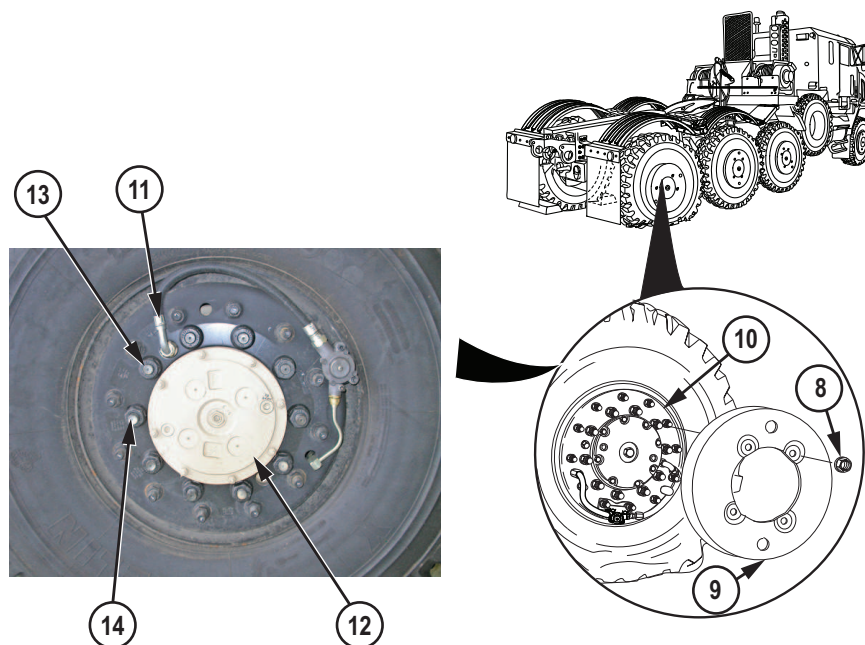
*Figure 8. Flat Tire Removal.*

7. Install saddle adapter (3) on jack (4) with two locking pins (5) and position jack (4) on jack plate (1) under rear axle housing (7).
8. Use extension handle (6) to raise jack (4) until saddle adapter (3) is seated on rear axle housing (7).

**NOTE**

Flat tire is removed from front and rear axles the same way. Axle No. 4 shown.

9. Remove four nuts (8) and wheel cover (9) from flat tire/wheel assembly (10).

**FLAT TIRE REMOVAL - Continued***Figure 9. Flat Tire Removal.***CAUTION**

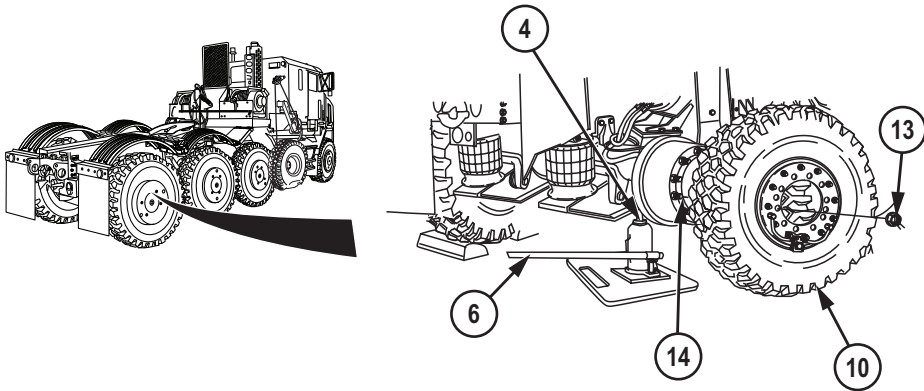
Keep hoses clean and dry when removing from CTIS wheel valve. Failure to comply may result in damage to equipment.

10. Use tube wrench to turn hose end (11) counter clockwise and remove hose end (11) from hub (12).

**WARNING**

Never loosen or remove the 20 smaller nuts around the outside of the rim assembly. Rim could separate. Failure to comply may result in serious injury or death to personnel.

11. Using air powered wrench and 1-1/2" socket, loosen 10 lug nuts (13) on flat tire/wheel assembly (10). Do not remove lug nuts (13).
12. Use extension handle (6) to raise jack (4) until flat tire/wheel assembly (10) is off ground.

**FLAT TIRE REMOVAL - Continued***Figure 10. Flat Tire Removal.***WARNING**

Wheel/tire assembly weighs 523 lb. (237 kg). Attach suitable lifting device prior to moving to prevent possible injury to personnel. Use caution when handling wheel/tire assembly to keep it from tipping over. Failure to comply may result in serious injury or death to personnel.

13. With the aid of an assistant bracing flat tire/wheel assembly (10), remove 10 lug nuts (13) from studs (14).

**WARNING**

Always wear heavy gloves when handling flat tire assembly. Failure to comply may result in serious injury or death to personnel.

**CAUTION**

Use care when removing flat tire/wheel assembly. Dragging assembly across studs may result in damage to studs.

14. With the aid of an assistant, walk flat tire/wheel assembly (10) from HET Tractor.
15. With the aid of an assistant, lean flat tire/wheel assembly (10) against HET Tractor.

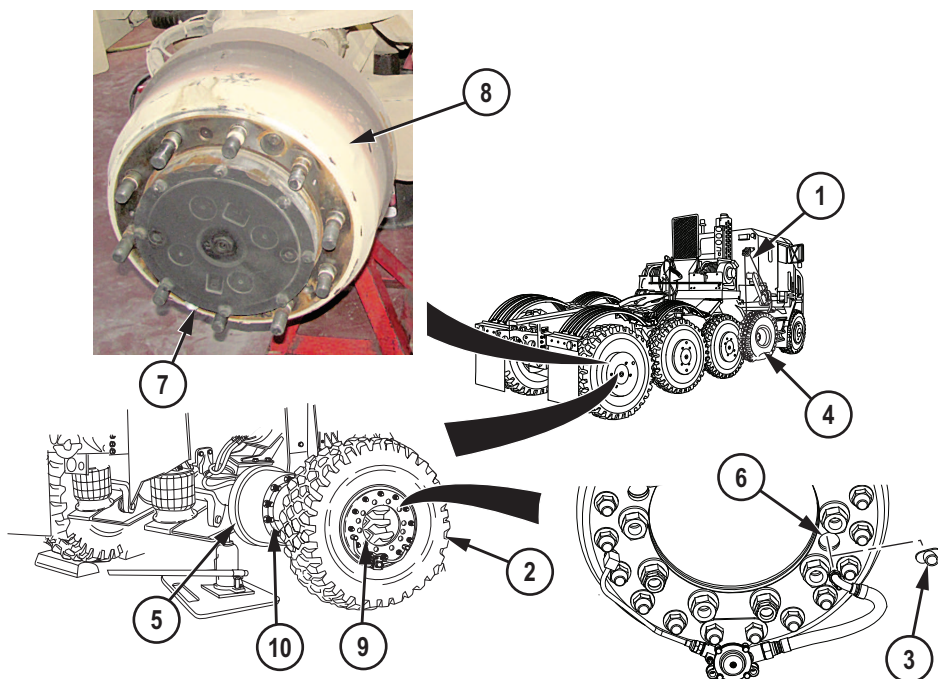
**END OF TASK**

## SPARE TIRE INSTALLATION

## WARNING

Always wear heavy gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in serious injury or death to personnel.

1. With the aid of an assistant, remove cable (1) from spare tire/wheel assembly (2).



*Figure 11. Spare Tire Installation.*

2. Remove CTIS cap (3) from spare tire/wheel assembly (2) and install on flat tire/wheel assembly (4).
3. With the aid of an assistant, roll spare tire/wheel assembly (2) to axle (5) from which flat tire/wheel assembly (4) was removed.

3. With the aid of an assistant, roll spare tire/wheel assembly (2) to axle (5) from which flat tire/wheel assembly (4) was removed.

## CAUTION

Position spare tire/wheel assembly so that larger hole in spare tire/wheel assembly is aligned with CTIS fitting. Damage to CTIS fittings and wheel may result if spare tire/wheel assembly is not correctly installed.

**SPARE TIRE INSTALLATION - Continued****NOTE**

- Spare tire/wheel assembly should have CTIS valve facing out.
  - Jack may need to be raised to allow spare tire/wheel assembly to be installed on axle.
4. With the aid of an assistant, align hole (6) in spare tire/wheel assembly (2) with CTIS fitting (7) in hub (8).
  5. With the aid of an assistant, line up 10 holes (9) in spare tire/wheel assembly (2) with studs (10) on hub (8).

**WARNING**

Tire assembly weighs 523 lb (237 kg). Do not try to lift or catch tire assembly. Failure to comply may result in serious injury or death to personnel.

6. With the aid of an assistant, lean top of spare tire/wheel assembly (2) against hub (8) and axle (5).

**WARNING**

Use caution when operating jack. Personal injury or death may result if jack slips out from under Heavy Equipment Transporter (HET) Tractor.

**WARNING**

Never go under Heavy Equipment Transporter (HET) Tractor with engine running. HET Tractor may move unexpectedly. Failure to comply may result in serious injury or death to personnel.

**CAUTION**

Use care when installing spare tire/wheel assembly and lug nuts. Dragging assembly across studs or cross-threading lug nuts may result in damage to studs.

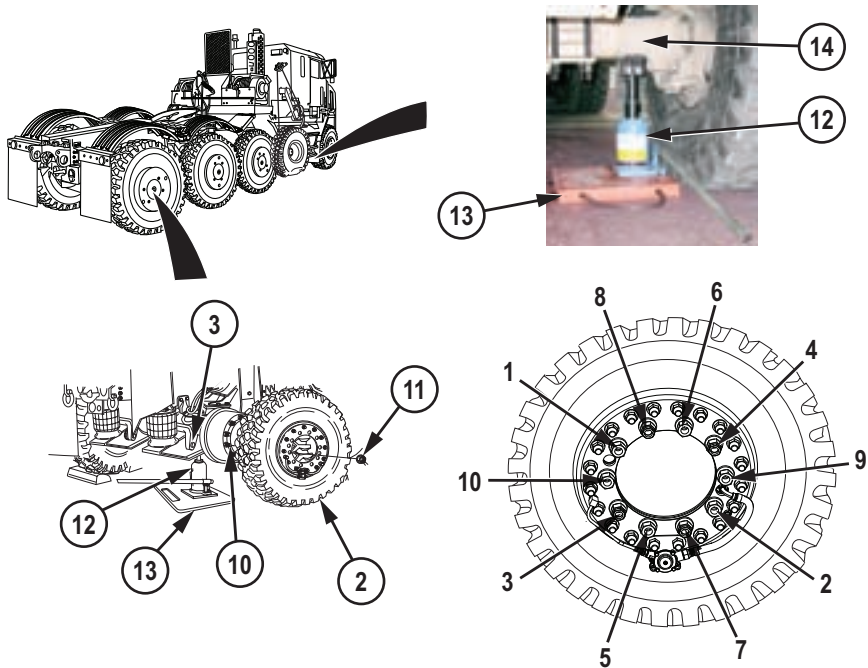
**NOTE**

It may be necessary to raise jack to get inflated spare tire/wheel assembly on wheel hub.



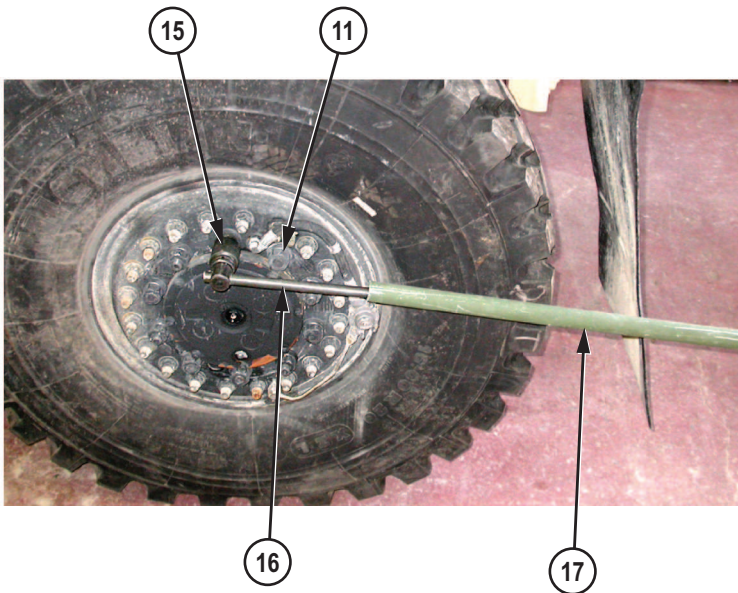
**SPARE TIRE INSTALLATION - Continued**

7. With the aid of an assistant, slide spare tire/wheel assembly (2) onto studs (10) with extension handle. Locate upper studs first: bottom of spare tire/wheel assembly (2) should swing toward HET Tractor.



*Figure 12. Spare Tire Installation.*

8. Install 10 lug nuts (11) on studs (10). Tighten lug nuts (10) until spare tire/wheel assembly (2) is seated.
9. Lower HET Tractor with jack (12) until spare tire/wheel assembly (2) just touches ground.
10. Tighten 10 lug nuts (11) as tight as possible in criss-cross order shown.
11. Lower HET Tractor with jack (12) and remove jack (12) and jack plate (13) from under front axle (14) or rear axle (5).
12. After jack is removed, use socket (15), sliding handle (16) and extension handle (17) to further check and tighten 10 lug nuts (11).

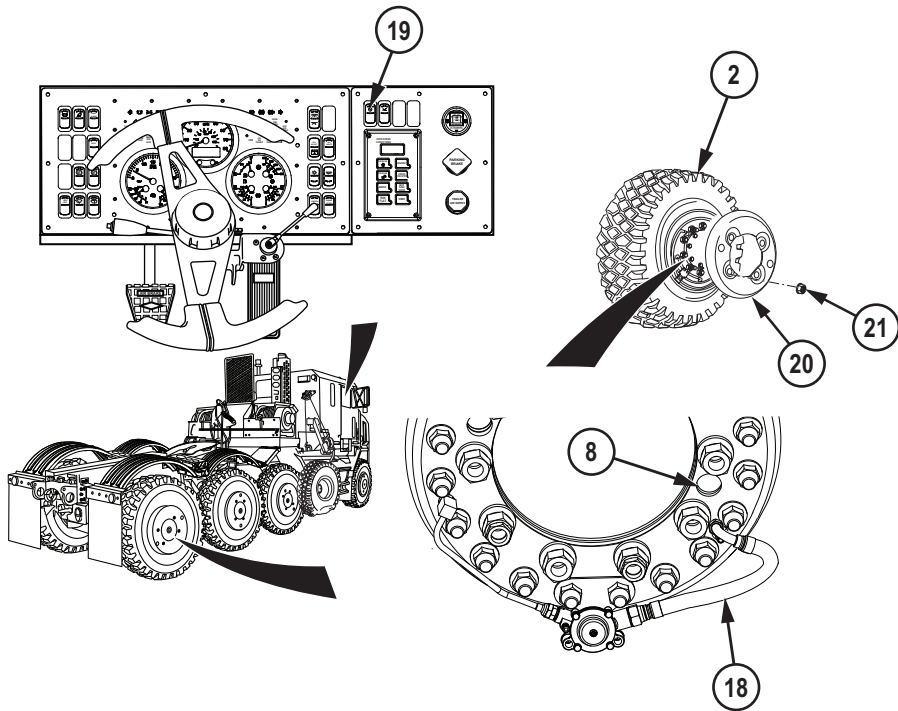
**SPARE TIRE INSTALLATION - Continued**

*Figure 13. Spare Tire Installation.*

**CAUTION**

- Keep hoses clean and dry when removing from CTIS wheel valve. Failure to comply may result in damage to CTIS wheel valve and may result in damage to equipment.
- Ensure CTIS hose is routed between lug nuts when installing . Failure to comply may result in chafing of hose and may result in damage to equipment.

13. Install hose (18) on hub (8).

**SPARE TIRE INSTALLATION - Continued**

*Figure 14. Spare Tire Installation.*

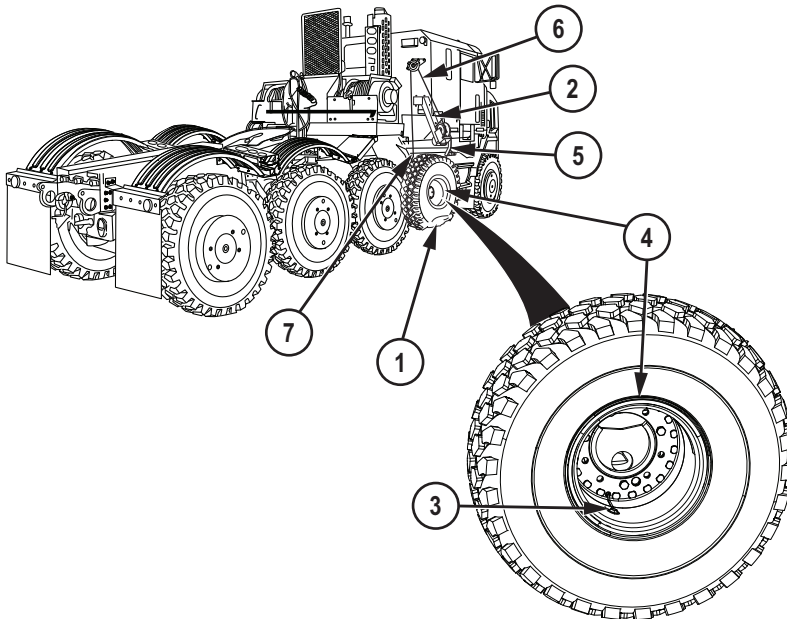
14. If not already running, Start engine. (WP 0045)
15. Push CTIS on/off switch (19) up to on position.
16. As CTIS system adjusts tire pressure, check hose (18) for leaks. Tighten Hose connections if necessary.
17. If running, shut engine OFF. (WP 0050)
18. Install wheel cover (20) on spare tire/wheel assembly (2) with four nuts (22) clockwise.

**END OF TASK**

**FLAT TIRE STOWAGE****WARNING**

Always wear heavy gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in serious injury or death to personnel.

1. With the aid of an assistant, roll flat tire/wheel assembly (1) under tire lift (2) so CTIS valve stem (3) is down and the deep side of wheel (4) is facing out from HET Tractor.



*Figure 15. Flat Tire Stowage.*

2. Turn handcrank (5) to let out cable (6).
3. Pull hook (7) through flat tire/wheel assembly (1) and attach hook (7) to cable (6) at top of flat tire/wheel assembly (1).

**WARNING**

Wheel/tire assembly weighs 523 lb. (237 kg). Attach suitable lifting device prior to moving to prevent possible injury to personnel. Use caution when

**FLAT TIRE STOWAGE - Continued**

handling wheel/tire assembly to keep it from tipping over. Failure to comply may result in serious injury or death to personnel.

**WARNING**

Always wear heavy gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in serious injury or death to personnel.

**CAUTION**

- Use care when raising tire/wheel assembly to prevent damage to CTIS wheel valve.
  - Do not attempt to mount spare tire/wheel assembly with CTIS wheel valve on top. Failure to comply will result in damage to CTIS wheel valve.
4. With the aid of an assistant pulling flat tire/wheel assembly (1) away from bracket (8), turn handcrank (5) to raise flat tire/wheel assembly (1) just above bracket (8).

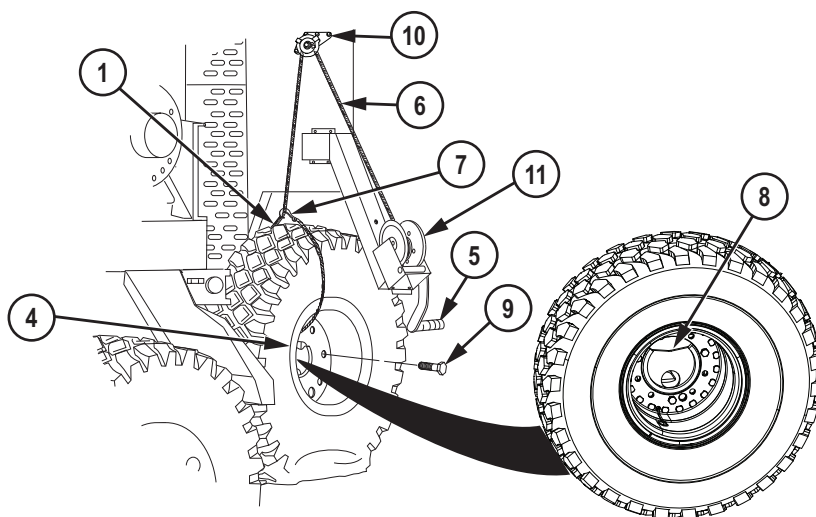


Figure 16. Flat Tire Stowage.

5. Turn handcrank (5) to lower flat tire/wheel assembly (1) onto bracket (8).
6. With the aid of an assistant, install three screws (9) through wheel (4) into bracket (8).
7. Remove hook (7) and cable (6) from flat tire/wheel assembly (1) and pulley (10).

**FLAT TIRE STOWAGE - Continued**

8. Turn handcrank (5) to return cable (6) onto winch (11).

**END OF TASK****TIRE LIFT WINCH STOWAGE**

1. Remove safety pin (1) from pin (2). Remove pin (2) from tire lift arm (3) and spare tire lifting bracket (4).

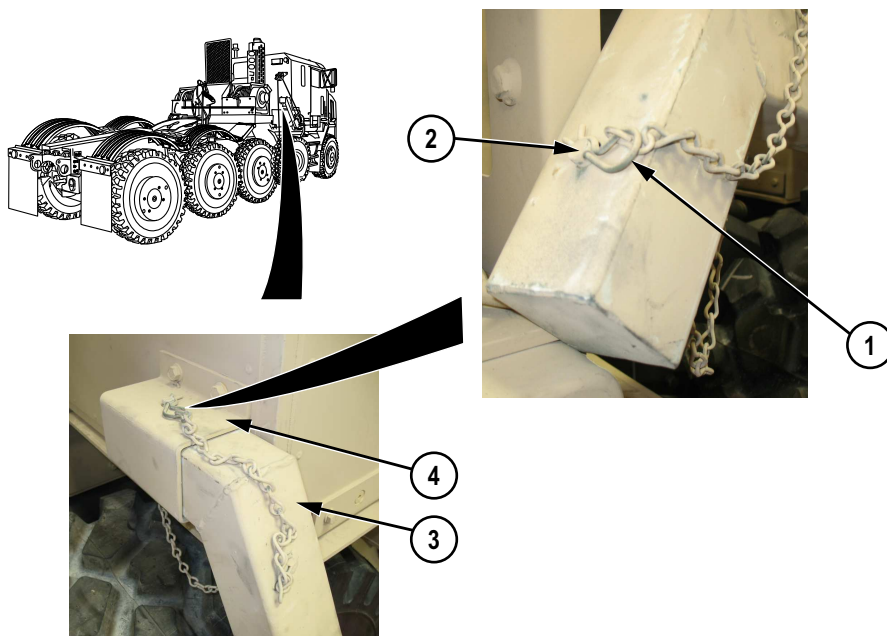
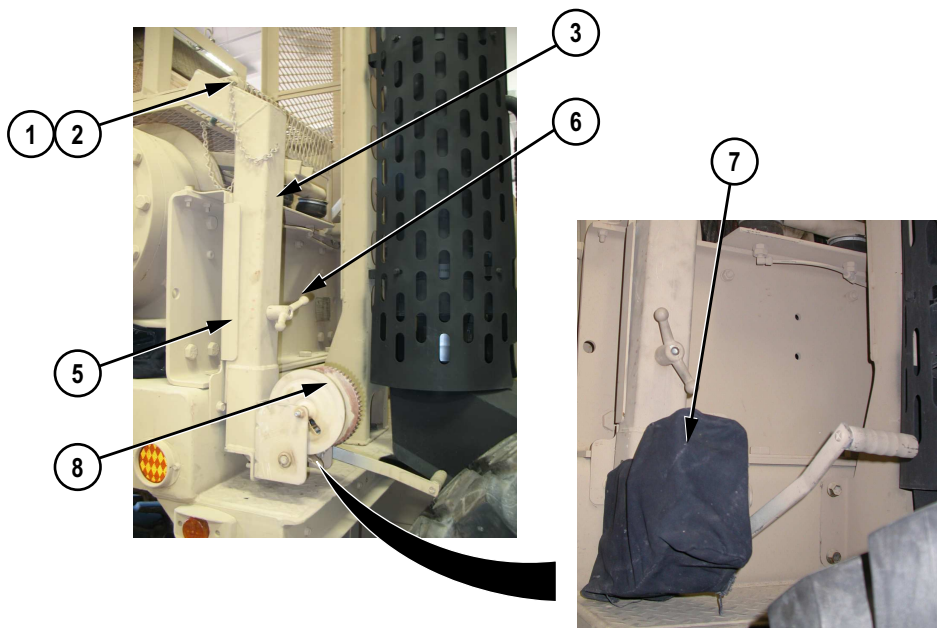


Figure 17. Tire Lift Winch Stowage.

2. Remove tire lift arm (3) from spare tire lifting bracket (4).
3. Install pin (2) in tire lift arm (3). Install safety pin (1) in pin (2).
4. Install tire lift arm (3) on stowage bracket (5) with T-handle (6).

**TIRE LIFT WINCH STOWAGE - Continued**

*Figure 18. Tire Lift Winch Stowage.*

5. Install cover (7) on tire lift winch (8).

**END OF TASK****Follow-On Maintenance**

1. Retrieve and stow emergency marker kit. (WP 0078)
2. Start engine. (WP 0045)
3. Remove wheel chocks. (WP 0036)
4. Release parking brake. (WP 0049)
5. Notify field maintenance to tighten lug nuts to proper torque values as soon as possible.
6. Notify field maintenance to repair flat tire/wheel assembly as soon as possible.

**END OF TASK****END OF WORK PACKAGE**





## OPERATOR MAINTENANCE SERVICING TIRES

### INITIAL SETUP:

#### Tools and Special Tools

Goggles, Industrial (WP 0138, Table 2)

#### Tools and Special Tools (cont.)

Hose Assembly, Air (WP 0137, Table 3, Item 26)

Tire Inflator/Gauge (WP 0137, Table 3, Item 43)

#### Equipment Condition

Shut engine OFF. (WP 0050)

Parking brake applied. (WP 0049)

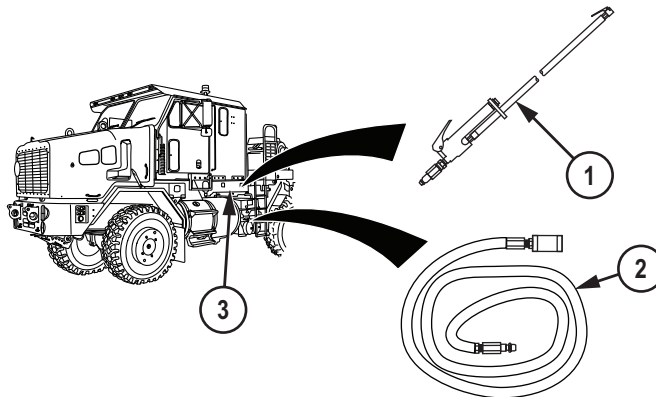
Wheels chocked. (WP 0036)

### CHECK TIRE PRESSURE

#### NOTE

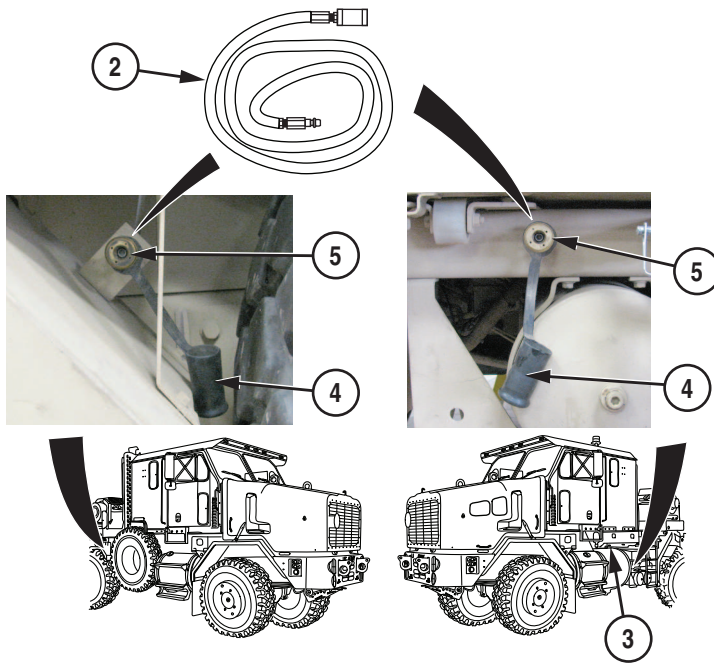
All tires (including spare) are checked the same way (front driver side tire shown).

1. Remove tire inflator/gauge (1) and air hose assembly (2) from stowage box (3).

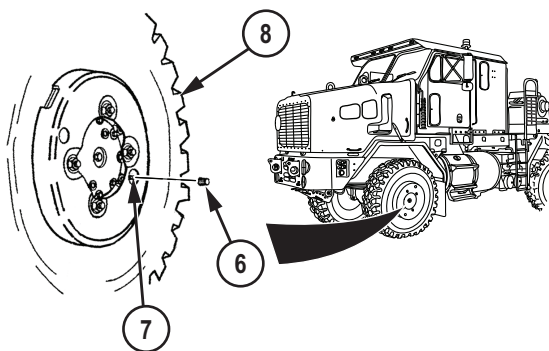


*Figure 1. Check Tire Pressure.*

2. Remove cover (4) and connect air hose assembly (2) to accessory air chuck (5).

**CHECK TIRE PRESSURE - Continued***Figure 2. Check Tire Pressure.*

3. Attach tire inflator/gauge (1) to air hose assembly(2).
4. Remove valve stem cap (6) from valve stem (7) of tire (8) to be checked.

*Figure 3. Check Tire Pressure.*

5. Push latch handle (9) of tire inflator/gauge (1) inward while pushing air chuck (10) onto valve stem (7).

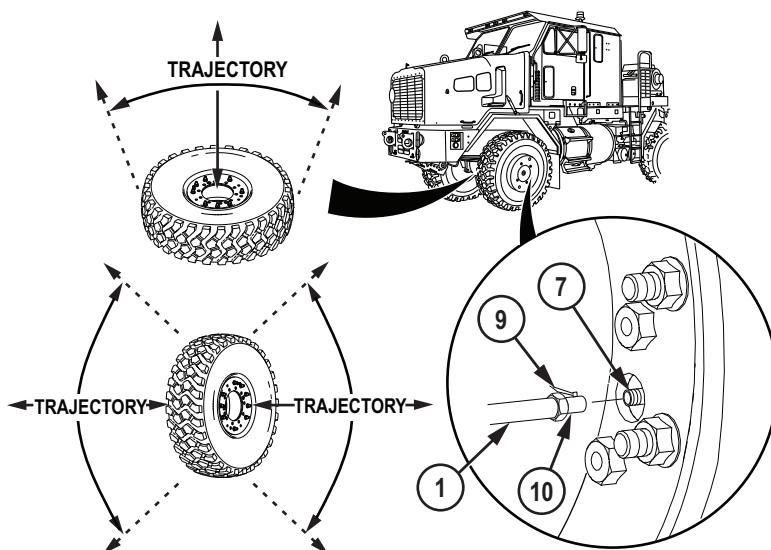
**CHECK TIRE PRESSURE - Continued**

Figure 4. Check Tire Pressure.

**WARNING**

Prior to inflating or deflating wheel/tire assembly, stand clear of trajectory area. Failure to comply may result in serious injury or death to personnel.

**NOTE**

- Air chuck must be properly seated on valve stem to obtain an accurate air pressure reading.
  - Air chuck is properly seated on valve stem when no air is escaping from connection to valve stem.
  - Trajectory area as shown applies to all tire/wheel assemblies.
6. Release latch handle (9) when air chuck (10) is properly seated on valve stem (7). Immediately step out of the trajectory area.

**NOTE**

Pressure gauge on tire inflator/gauge will only indicate tire pressure when handle is released.

7. Read tire air pressure on pressure gauge (11) of tire inflator/gauge (1) and compare to Table 1 (below).

CHECK TIRE PRESSURE - Continued

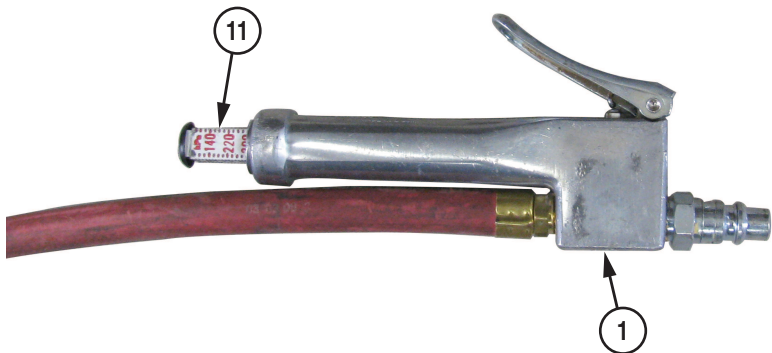


Figure 5. Check Tire Pressure.

Table 1. Unsafe Inflation Pressures.

	Front Tires	Rear Tires	Front Tires	Rear Tires
	<div>NOTE</div> <ul style="list-style-type: none"><li>• <b>Under-Inflated</b> - A tire is considered under-inflated if measured tire pressure is 80% or less below standard tire pressure.</li><li>• <b>Do not adjust tire pressure if it is <u>below</u> tire pressure indicated below.</b></li></ul>		<div>NOTE</div> <ul style="list-style-type: none"><li>• <b>Over-Inflated</b> - A tire is considered over-inflated if measured tire pressure is 25% or more above standard tire pressure.</li><li>• <b>Do not adjust tire pressure if it is <u>above</u> tire pressure indicated below.</b></li></ul>	
Highway	76 psi (524 kPa)	66 psi (455 kPa)	118 psi (813 kPa)	102 psi (703 kPa)
Cross Country	60 psi (414 kPa)	46 psi (317 kPa)	93 psi (641 kPa)	71 psi (489 kPa)
Mud, Sand, and Snow	32 psi (221 kPa)	25 psi (173 kPa)	50 psi (344 kPa)	38 psi (262 kPa)

**CHECK TIRE PRESSURE - Continued****Table 1. Unsafe Inflation Pressures - Continued.**

	<b>Front Tires</b>	<b>Rear Tires</b>	<b>Front Tires</b>	<b>Rear Tires</b>
Emergency	32 psi (221 kPa)	24 psi (166 kPa)	48 psi (330 kPa)	37 psi (255 kPa)

**WARNING**

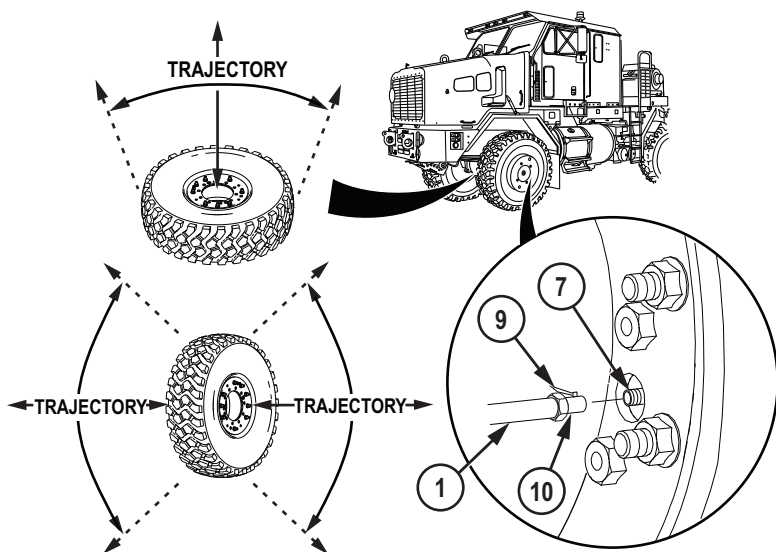
It is not safe to adjust tire pressure if tire has been run flat, or is over or under-inflated when tire is compared to Table 1, or if wheel/tire assembly has obvious or suspected damage. Completely deflate tire and remove tire from axle. Failure to comply may result in serious injury or death to personnel.

- a. If tire pressure is outside safe limits set forth in Table 1 (above):
  - (1) Completely deflate tire.
  - (2) Change tire/wheel assembly (WP 0126).

**NOTE**

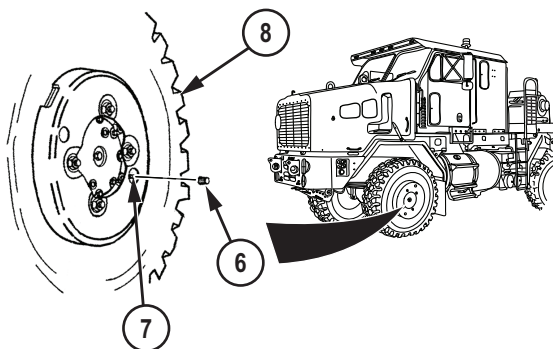
If Heavy Equipment Transporter (HET) Tractor CTIS is operative and tires need to be inflated/deflated to a standard tire pressure, CTIS can be used to service tires (WP 0052).

- b. If tire pressure is within safe limits set forth in Table 1, refer to Manually Inflate Tire procedures or Manually Deflate Tire procedures (as required) within this work package.
8. When checking tire pressure is complete, push latch handle (9) of tire inflator/gauge (1) inward while pulling air chuck (10) from valve stem (7).

**CHECK TIRE PRESSURE - Continued**

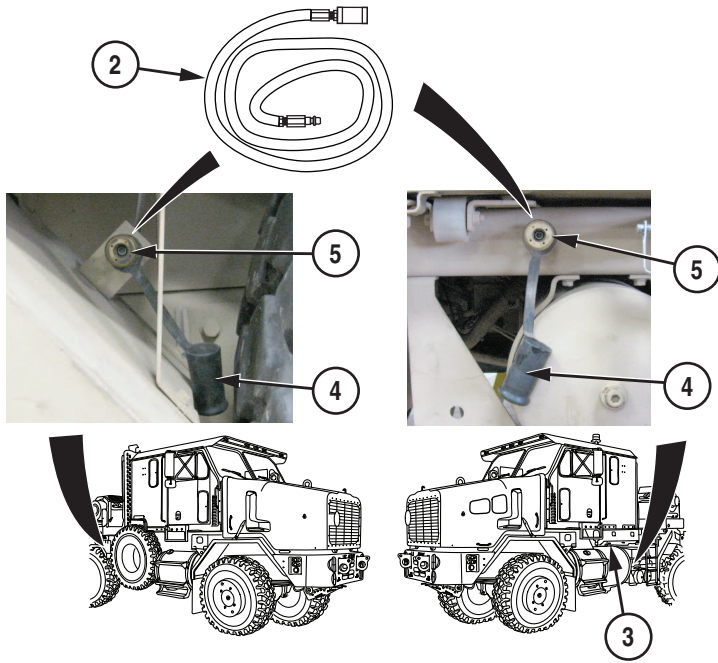
*Figure 6. Check Tire Pressure.*

9. Install valve stem cap (6) on valve stem (7) of tire (8).



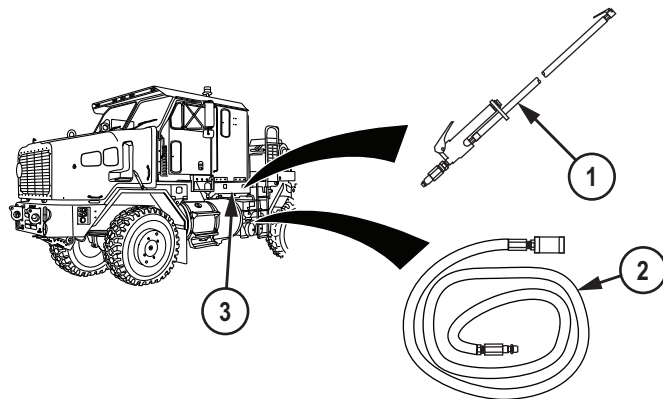
*Figure 7. Check Tire Pressure.*

10. Disconnect air hose assembly (2) from accessory air chuck (5) and install cover (4).

**CHECK TIRE PRESSURE - Continued**

*Figure 8. Check Tire Pressure.*

11. Disconnect tire inflator/gauge (1) from air hose assembly(2).



*Figure 9. Check Tire Pressure.*

**CHECK TIRE PRESSURE - Continued**

12. Return tire inflator/gauge (1) and air hose assembly (2) to stowage box (3).

**END OF TASK****MANUALLY INFLATE TIRE**

Use the following procedures if HET Tractor CTIS system is inoperative and tire requires manual inflation:

**NOTE**

All tires (including spare) are manually inflated the same way (front driver side tire shown).

1. Remove air hose assembly (1) and tire inflator/gauge (2) from stowage box (3).

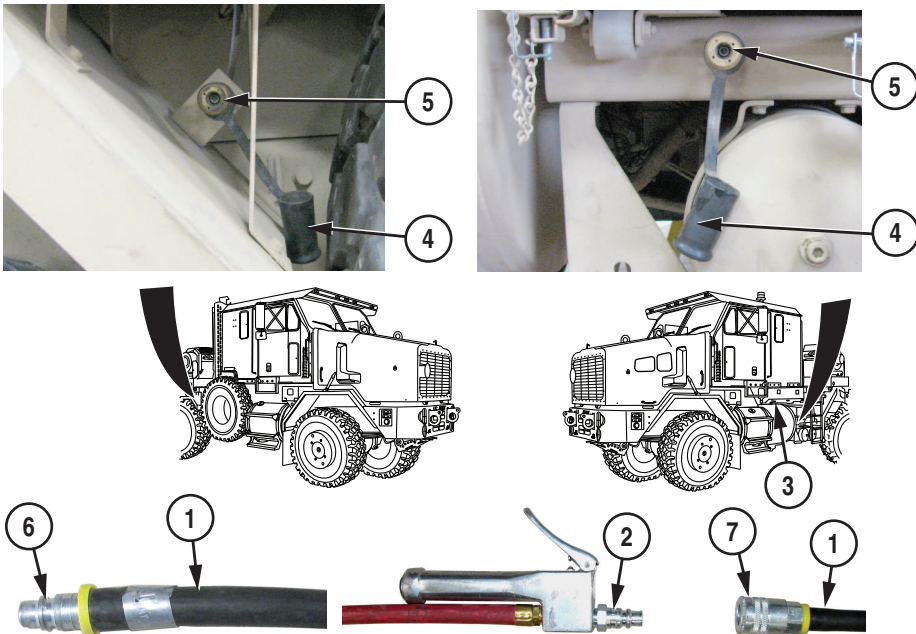


Figure 10. Manually Inflate Tire.

**NOTE**

HET Tractor is equipped with both driver side and passenger side pneumatic air chucks.



**MANUALLY INFLATE TIRE - Continued**

2. Remove cover (4) from pneumatic air chuck (5).
3. Connect male end (6) of air hose assembly (1) to pneumatic air chuck (5).
4. Connect tire inflator/gauge (2) to quick-disconnect coupling (7) of air hose assembly (1).
5. Start engine (WP 0045).
6. Remove valve stem cap (8) from valve stem (9) of tire (10) to be inflated.

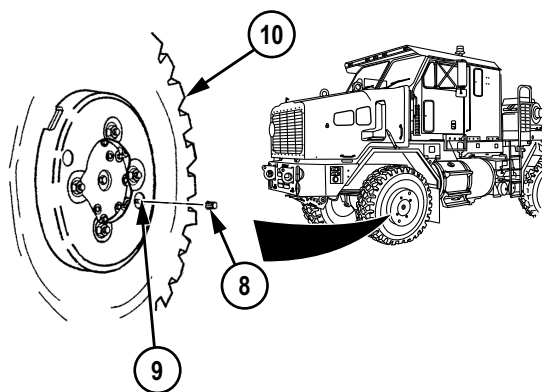


Figure 11. Manually Inflate Tire.

**NOTE**

Trajectory area as shown applies to all wheel/tire assemblies.

7. Push latch handle (11) of tire inflator/gauge (2) inward while pushing air chuck (12) onto valve stem (9).

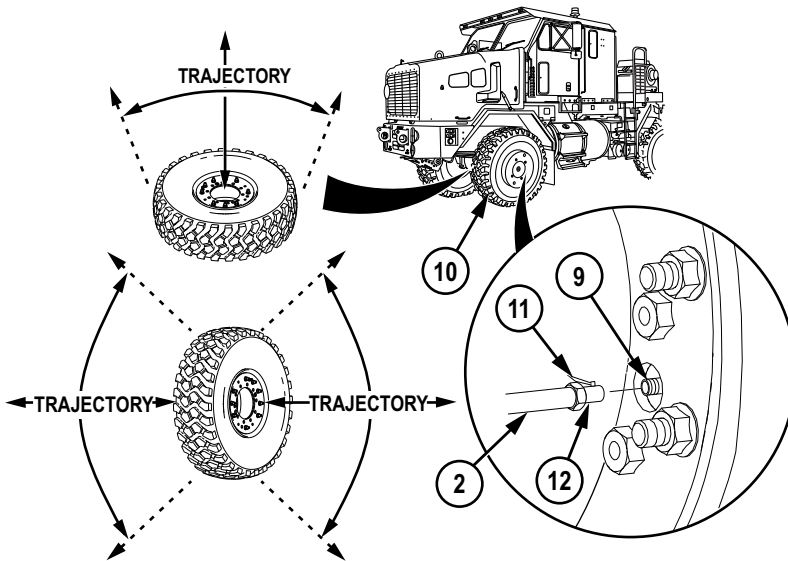
**MANUALLY INFLATE TIRE - Continued**

Figure 12. Manually Inflate Tire.

**WARNING**

Prior to inflating or deflating wheel/tire assembly, stand clear of trajectory area. Failure to comply may result in serious injury or death to personnel.

**NOTE**

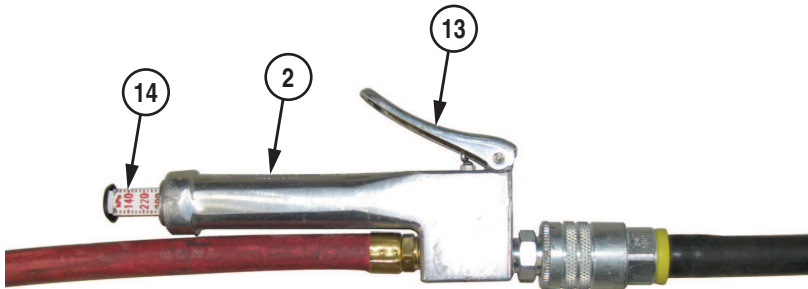
- Air chuck must be properly seated on valve stem to obtain an accurate air pressure reading.
- Air chuck is properly seated on valve stem when no air is escaping from connection to valve stem.
- Trajectory area as shown applies to all tire/wheel assemblies.

8. Release latch handle (11) when air chuck (12) is properly seated on valve stem (9). Immediately step out of the trajectory area.

**WARNING**

Use caution when inflating tire. Over-inflation may cause tire to blow apart which may result in serious injury or death to personnel.

9. Inflate tire (10) to proper pressure for terrain conditions:
  - a. Squeeze handle (13) of tire inflator/gauge (2).

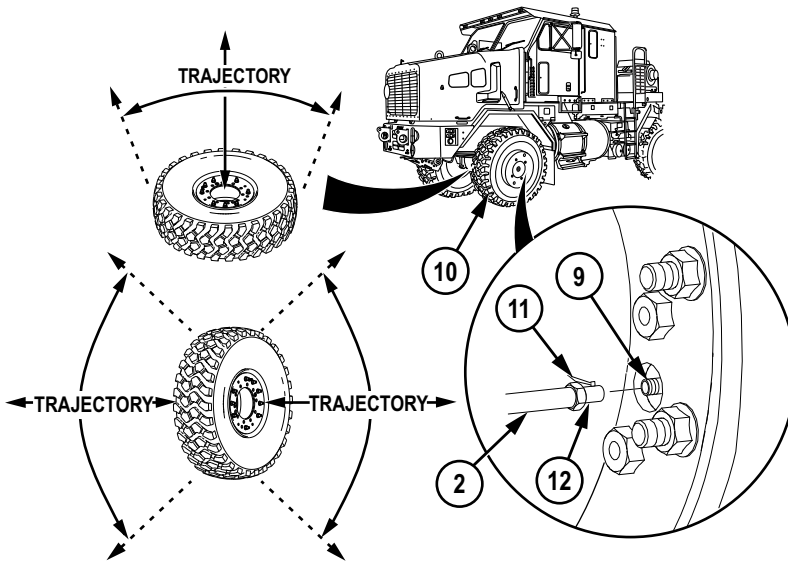
**MANUALLY INFLATE TIRE - Continued**

*Figure 13. Manually Inflate Tire.*

**NOTE**

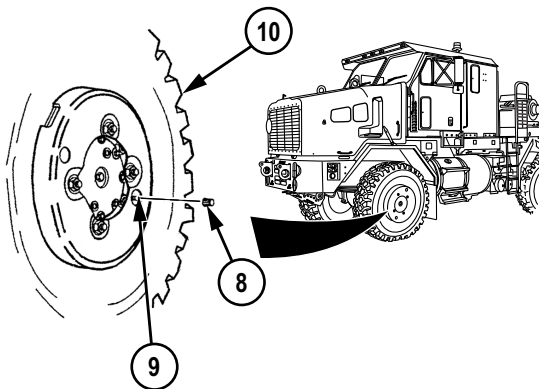
Pressure gauge on tire inflator/gauge will only indicate tire pressure when handle is released.

- b. Release handle (13) of tire inflator/gauge (2) to check air pressure reading on pressure gauge (14).
  - c. Repeat Steps (a) and (b) until desired air pressure is achieved.
10. When tire inflation is complete, push latch handle (11) of tire inflator/gauge (2) inward while pulling air chuck (12) from valve stem (9).

**MANUALLY INFLATE TIRE - Continued**

*Figure 14. Manually Inflate Tire.*

11. Install valve stem cap (8) on valve stem (9) of tire (10).



*Figure 15. Manually Inflate Tire.*

12. Remove tire inflator/gauge (2) from quick-disconnect coupling (7) of air hose assembly (1).

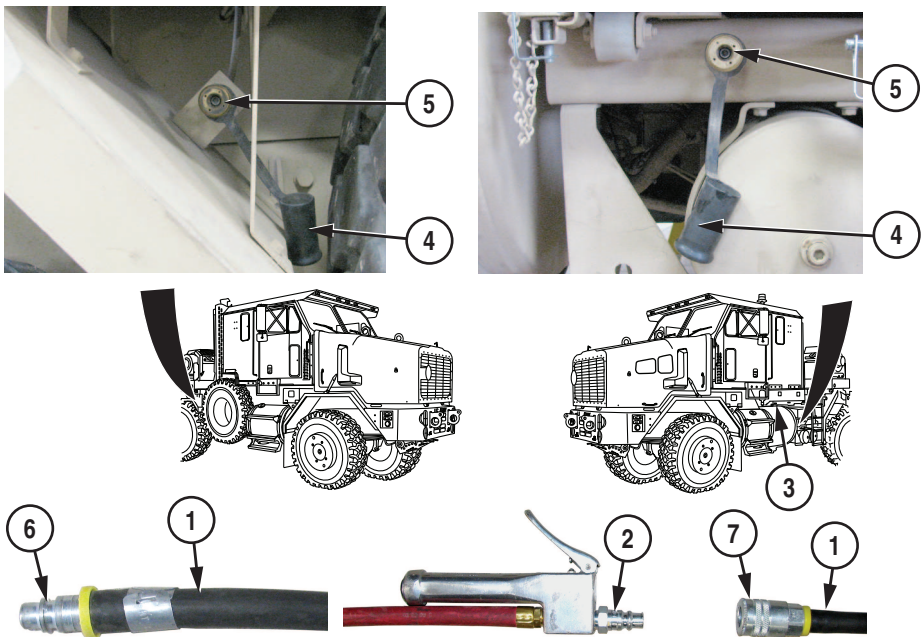
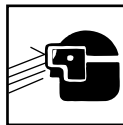
**MANUALLY INFLATE TIRE - Continued**

Figure 16. Manually Inflate Tire.

**WARNING**

Air hose is under pressure and can fly out at fast rate of speed. Wear proper eye protection. Hold end of air hose when disconnecting from quick-disconnect coupling. Failure to comply may result in serious injury or death to personnel.

13. Remove male end (6) of air hose assembly (1) from pneumatic air chuck (5).
14. Install cover (4) on pneumatic air chuck (5).
15. Return air hose assembly (1) and tire inflator/gauge (2) to stowage box (3).
16. Shut off engine (WP 0050)

**END OF TASK**

## MANUALLY DEFLATE TIRE

Use the following procedures if HET Tractor CTIS system is inoperative and tire requires manual deflation:

### NOTE

All tires (including spare) are manually deflated the same way (front driver side tire shown).

1. Remove tire inflator/gauge (1) from stowage box (2).

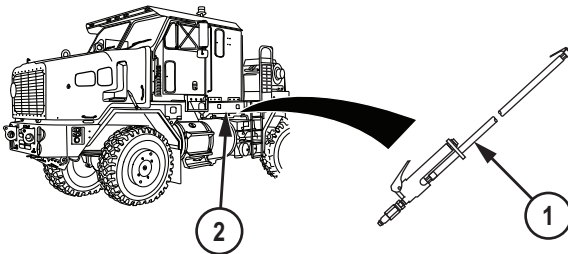


Figure 17. Manually Deflate Tire.

2. Remove valve stem cap (3) from valve stem (4) of tire (5) to be deflated.

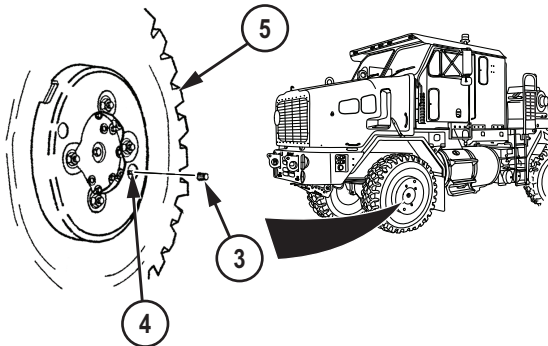


Figure 18. Manually Deflate Tire.

3. Push latch handle (6) of tire inflator/gauge (1) inward while pushing air chuck (7) onto valve stem (4).

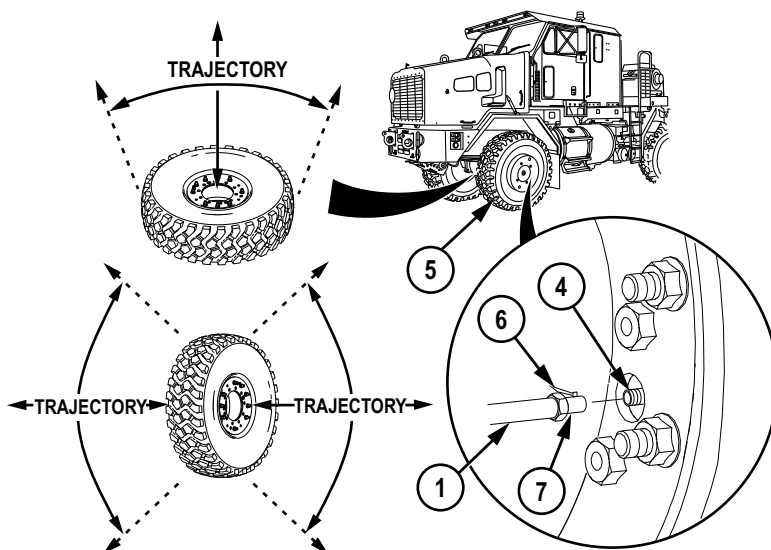
**MANUALLY DEFLATE TIRE - Continued**

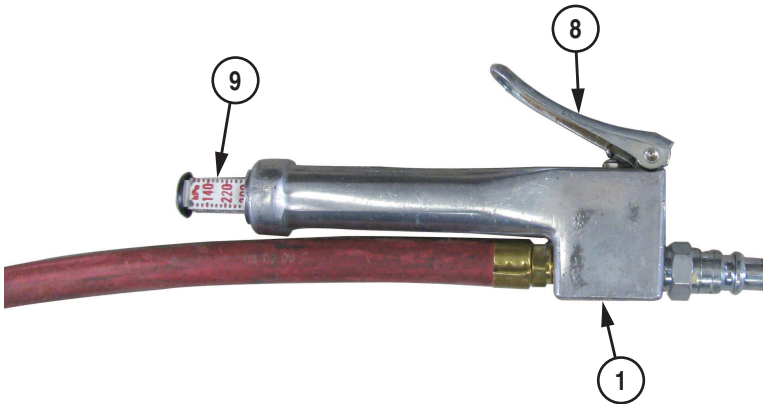
Figure 19. Manually Deflate Tire.

**WARNING**

Prior to inflating or deflating wheel/tire assembly, stand clear of trajectory area. Failure to comply may result in serious injury or death to personnel.

**NOTE**

- Air chuck must be properly seated on valve stem to obtain an accurate air pressure reading.
  - Air chuck is properly seated on valve stem when no air is escaping from connection to valve stem.
  - Trajectory area as shown applies to all tire/wheel assemblies.
4. Release latch handle (6) when air chuck (7) is properly seated on valve stem (4). Immediately step out of the trajectory area.
  5. Deflate tire (5) to proper pressure for terrain conditions:
    - a. Squeeze handle (8) of tire inflator/gauge (1).

**MANUALLY DEFLATE TIRE - Continued**

*Figure 20. Manually Deflate Tire.*

**NOTE**

Pressure gauge on tire inflator/gauge will only indicate tire pressure when handle is released.

- b. Release handle (8) of tire inflator/gauge (1) to check air pressure reading on pressure gauge (9) for proper pressure for terrain conditions.
  - c. Repeat Steps (a) and (b) until desired air pressure is achieved.
6. When deflation of tire is complete, push latch handle (6) of tire inflator/gauge (1) inward while pulling air chuck (7) from valve stem (4).



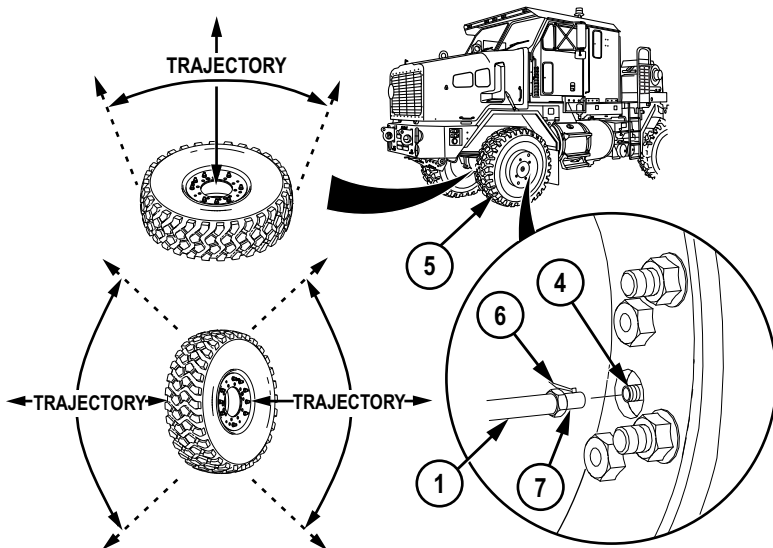
**MANUALLY DEFLATE TIRE - Continued**

Figure 21. Manually Deflate Tire.

7. Install valve stem cap (3) on valve stem (4) of tire (5).

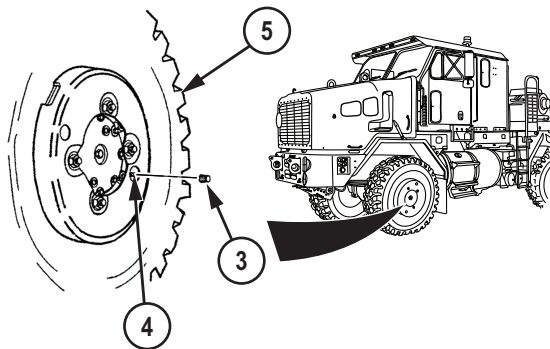
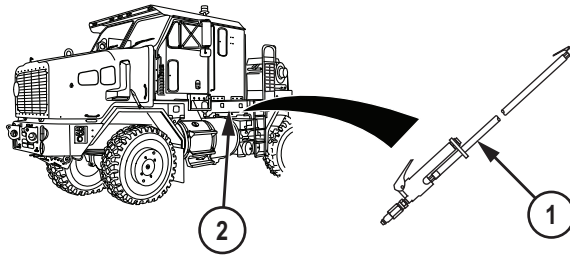


Figure 22. Manually Deflate Tire.

8. Return tire inflator/gauge (1) to stowage box (2).

**MANUALLY DEFLATE TIRE - Continued**

*Figure 23. Manually Deflate Tire.*

**END OF TASK****FOLLOW-ON MAINTENANCE**

Remove wheel chocks (WP 0036).

**END OF TASK****END OF WORK PACKAGE**

---

## OPERATOR MAINTENANCE DIPSTICK REMOVAL/INSTALLATION

---

### INITIAL SETUP:

#### Materials/Parts

Rags, Wiping (WP 0139, Table 1, Item 44)

#### Equipment Condition (cont.)

Parking brake applied. (WP 0049)  
Wheels chocked. (WP 0036)

#### Equipment Condition

Engine OFF. (WP 0050)

---

### REMOVAL

#### NOTE

Engine and transmission dipsticks are removed the same way.

1. Loosen dipstick (1) by turning handle (2) counterclockwise until stops (3) are free of notches (4).

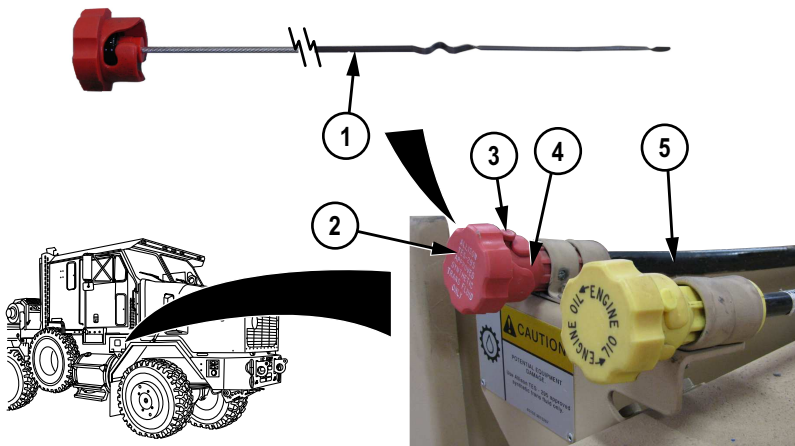


Figure 1. Dipstick Removal.

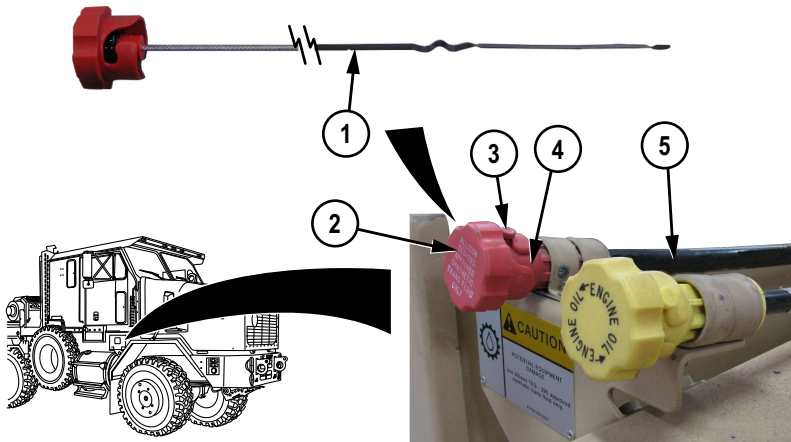
2. Remove dipstick (1) from dipstick tube (5).

### END OF TASK

**INSTALLATION****NOTE**

Engine and transmission dipsticks are installed the same way.

1. Install dipstick (1) in dipstick tube (5).



*Figure 2. Dipstick Installation.*

**NOTE**

Maintain inward pressure on handle while tightening.

2. Turn handle (2) clockwise until stops (3) engage notches (4) and handle (2) no longer turns freely.

**END OF TASK****FOLLOW-ON MAINTENANCE**

Remove wheel chocks (WP 0036).

**END OF TASK****END OF WORK PACKAGE**

---

## OPERATOR MAINTENANCE OPENING/CLOSING HOOD

---

### INITIAL SETUP:

#### Equipment Condition

Engine OFF. (WP 0050)

#### Equipment Condition (cont.)

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

---

### OPENING HOOD

#### NOTE

- Passenger side and driver side rubber latches operate the same way. Driver side shown.
- Release passenger side rubber latch first.

1. Pull down rubber latch (1) and disconnect from bracket (2) on hood (3).

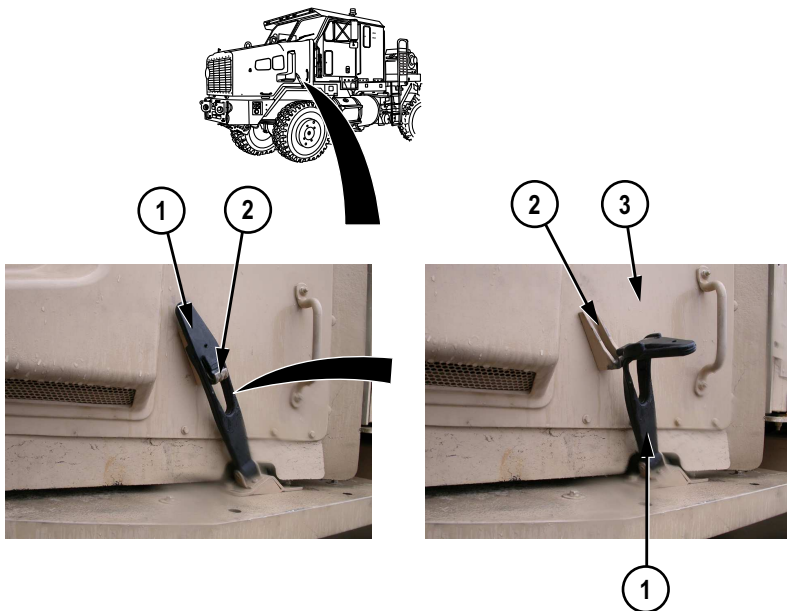


Figure 1. Opening Hood.

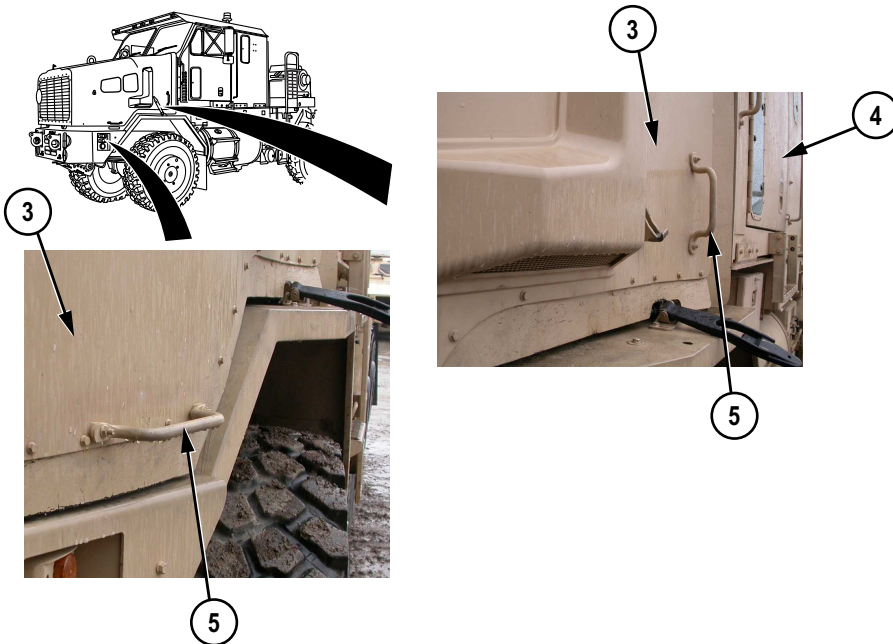
**OPENING HOOD - Continued**

2. Complete Step 1 on driver side of hood.

**WARNING**

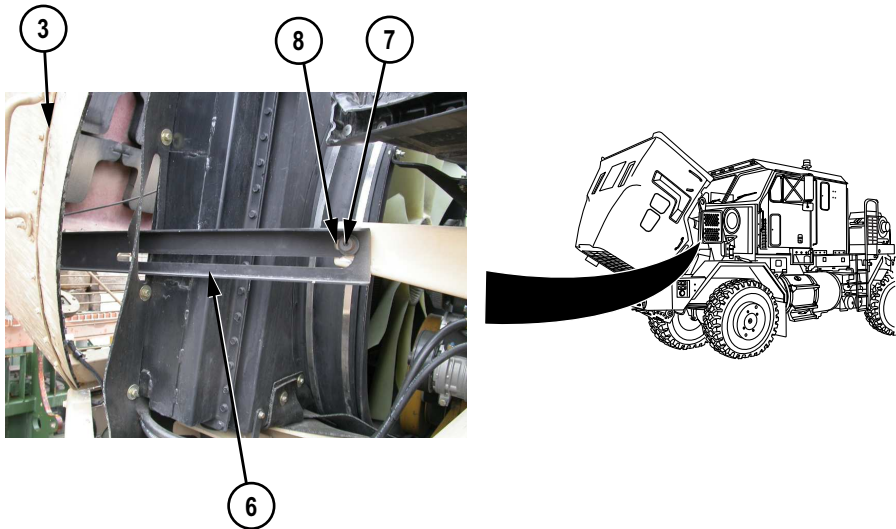
If hood support bracket is not latched, hood could fall. Support hood when hood support bracket is not latched. Failure to comply may result in serious injury or death to personnel.

3. On driver side of hood (3), push hood (3) away from cab (4) and open using grab handles (5).



*Figure 2. Opening Hood.*

4. Once hood (3) is fully open (movement stopped), push down on hood support bracket (6) to ensure stop pin (7) engages notch (8).

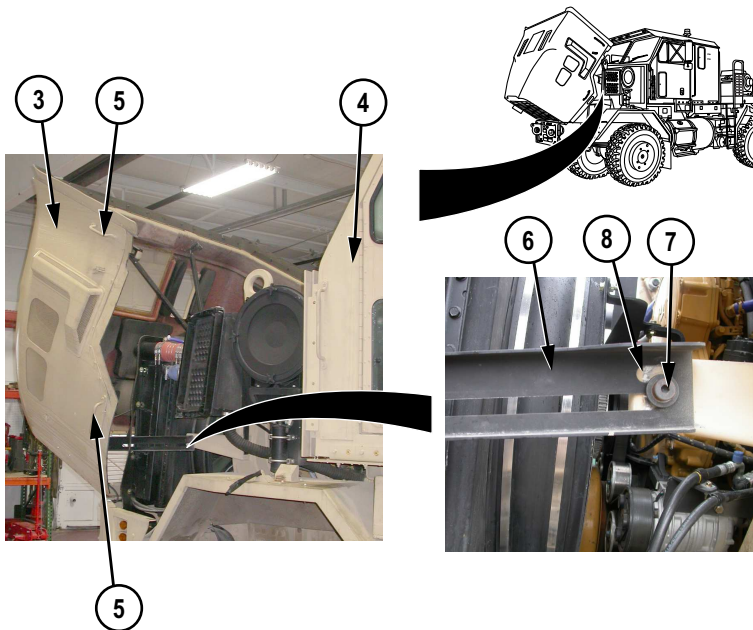
**OPENING HOOD - Continued**

*Figure 3. Opening Hood.*

**END OF TASK****CLOSING HOOD****WARNING**

If hood support bracket is not latched, hood could fall. Support hood when hood support bracket is not latched. Failure to comply may result in serious injury or death to personnel.

1. On driver side of hood (3), push up on hood support bracket (6) to disengage stop pin (7) from notch (8) and pull hood (3) toward cab (4) using grab handles (5) until hood (3) is seated against cab (4).

**CLOSING HOOD - Continued**

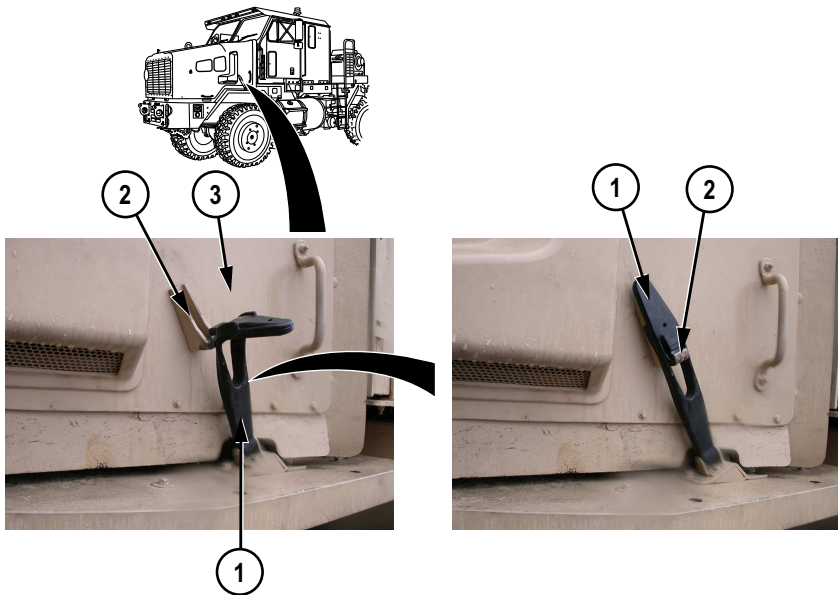
*Figure 4. Closing Hood.*

**NOTE**

Passenger side and driver side rubber latches operate the same way.  
Driver side shown.

2. Seat rubber latch (1) in bracket (2) and push rubber latch (1) up until flush with hood (3).



**CLOSING HOOD - Continued**

*Figure 5. Closing Hood.*

3. Complete Step 2 on passenger side of hood (3).

**END OF TASK****FOLLOW-ON MAINTENANCE**

Remove wheel chocks.

**END OF TASK****END OF WORK PACKAGE**



---

## OPERATOR MAINTENANCE OPENING/CLOSING BATTERY BOX

---

### INITIAL SETUP:

#### Tools and Special Tools

Goggles, Industrial (WP 0138, Table 2)

#### Equipment Condition (cont.)

Parking brake applied. (WP 0049)  
Wheels chocked. (WP 0036)

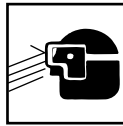
#### Equipment Condition

Engine OFF. (WP 0050)

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### OPENING BATTERY BOX

#### WARNING

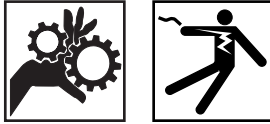


Wear proper eye protection when working around batteries. Failure to comply may result in serious injury or death to personnel.

#### WARNING



Batteries produce explosive gases. Do not smoke or use open flame near batteries. Do not allow hot, sparking, or glowing objects near batteries. If batteries are giving off gases, presence of a heat, flame, or spark may cause a direct short, severe burns, or electrical shock. Failure to comply may result in serious injury or death to personnel.

**OPENING BATTERY BOX - Continued****WARNING**

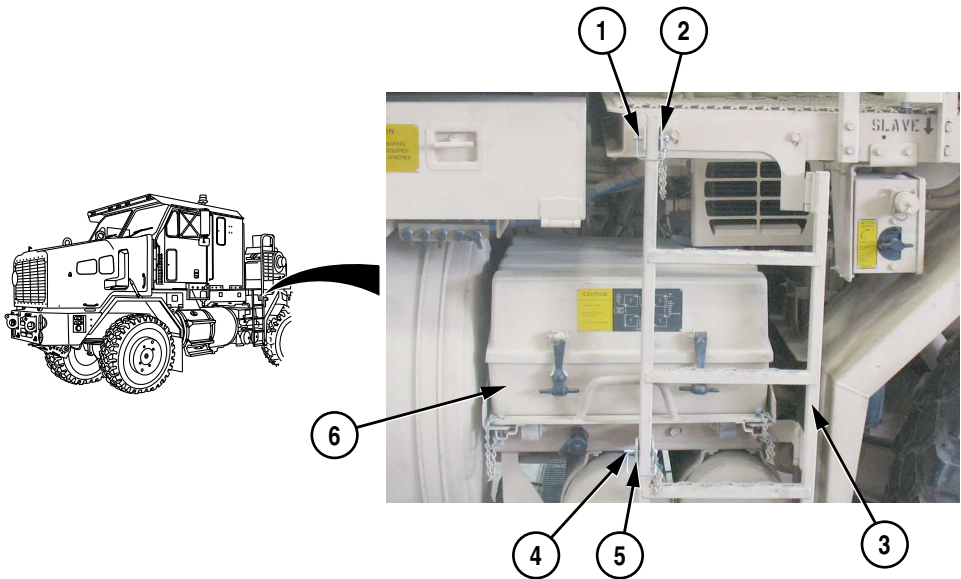
Use extreme care not to short out battery terminals. Remove all jewelry such as rings, ID tags, bracelets, etc., prior to working on or around Heavy Equipment Transporter (HET) Tractor. Jewelry and tools can catch on equipment, contact positive electrical circuits, and cause a direct short, severe burns, or electrical shock. Failure to comply may result in serious injury or death to personnel.

**WARNING**

**LEAD-ACID BATTERIES - Avoid battery electrolyte contact with skin, eyes, or clothing. If battery electrolyte spills, take immediate action to stop burning effects:**

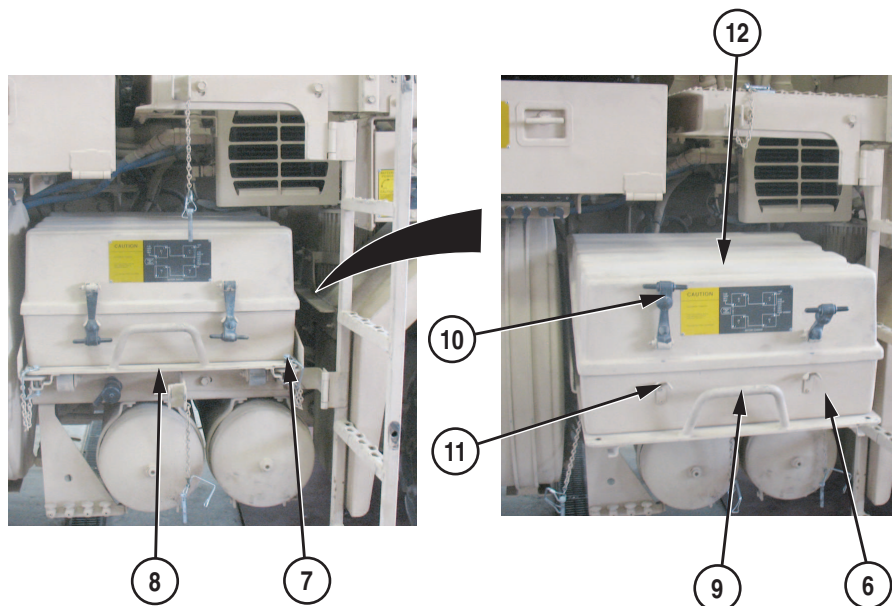
- External - If battery electrolyte contacts skin, immediately flush affected area with cold running water to remove all acid. Failure to comply may result in serious injury or death to personnel.
- Eyes - If battery electrolyte contacts eyes, immediately flush eyes with cold water for 15 minutes and seek immediate medical attention. **IMPORTANT** - If only one eye is affected, ensure the affected eye is always (during both flushing and transport) kept lower (the lower the better) than unaffected eye. This will help keep affected eye from draining into (and contaminating) the unaffected eye. Failure to comply may result in serious injury or death to personnel.
- Internal - If battery electrolyte is ingested (swallowed), drink large amounts of water or milk. Follow with milk of magnesia, a beaten egg, or vegetable oil and seek immediate medical attention. Failure to comply may result in serious injury or death to personnel.
- Clothing or Heavy Equipment Transporter (HET) Tractor - Immediately flush area with cold water and neutralize battery electrolyte with baking soda or household ammonia solution. Failure to comply may result in serious injury or death to personnel.

1. Remove clevis pin (1) from upper ladder support (2) and ladder (3).

**OPENING BATTERY BOX - Continued**

*Figure 1. Opening Battery Box.*

2. Remove clevis pin (4) from lower ladder support (5) and ladder (3).
3. Swing ladder (3) clear of battery box (6).
4. Install clevis pin (1) in upper ladder support (2).
5. Remove two clevis pins (7) from battery box tray (8).

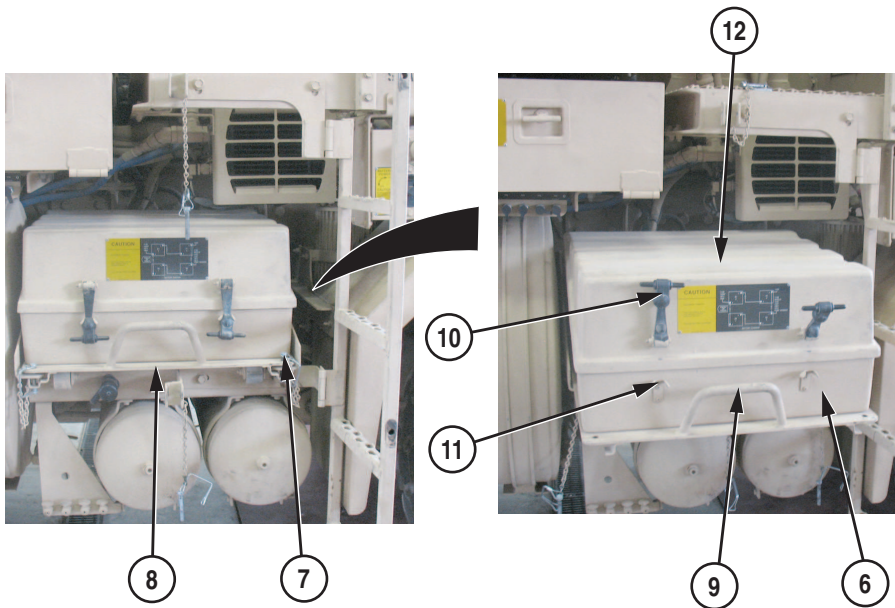
**OPENING BATTERY BOX - Continued**

*Figure 2. Opening Battery Box.*

6. Pull on handle (9) and slide battery box (6) out.
7. Disconnect two rubber hooks (10) from brackets (11).
8. Remove cover (12) from battery box (6).

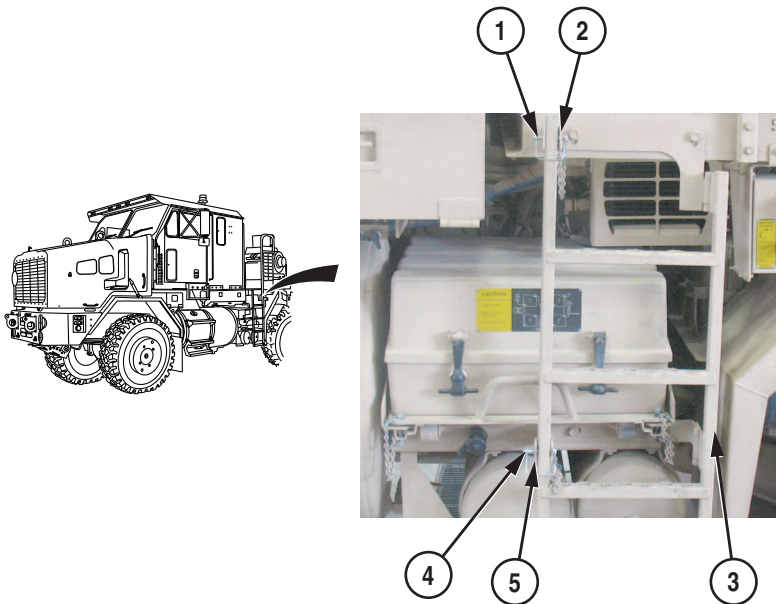
**END OF TASK****CLOSING BATTERY BOX**

1. Install cover (12) on battery box (6).

**CLOSING BATTERY BOX - Continued**

*Figure 3. Closing Battery Box.*

2. Connect two rubber hooks (10) on brackets (11).
3. Push on handle (9) and slide battery box (6) in.
4. Install two clevis pins (7) in battery box tray (8).
5. Remove clevis pin (1) from upper ladder support (2).

**CLOSING BATTERY BOX - Continued**

*Figure 4. Closing Battery Box.*

6. Swing ladder (3) into upper ladder support (2) and lower ladder support (5).
7. Install clevis pin (4) through lower ladder support (5) and ladder (3).
8. Install clevis pin (1) through upper ladder support (2) and ladder (3).

**END OF TASK****FOLLOW-ON MAINTENANCE**

Remove wheel chocks. (WP 0036)

**END OF TASK****END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE

### OPENING/CLOSING CAB CONTROL BOX (CCB) PANEL

---

#### INITIAL SETUP:

##### Equipment Condition

Engine OFF. (WP 0050)

##### Equipment Condition (cont.)

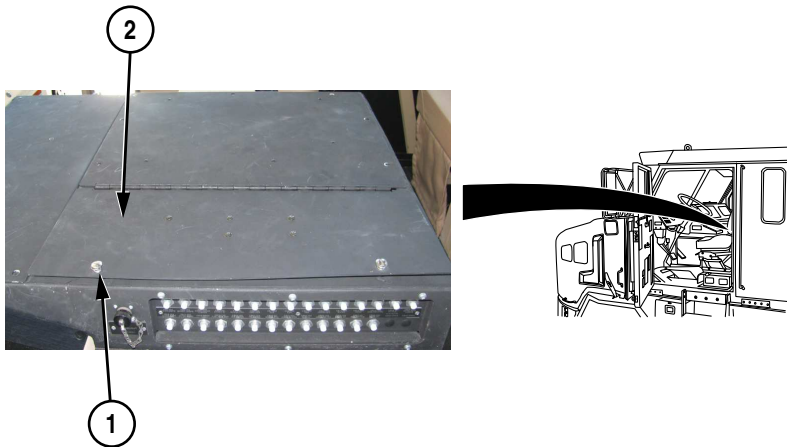
Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

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#### OPENING CAB CONTROL BOX (CCB) PANEL

Loosen two screws (1) and open cab control box panel (2).

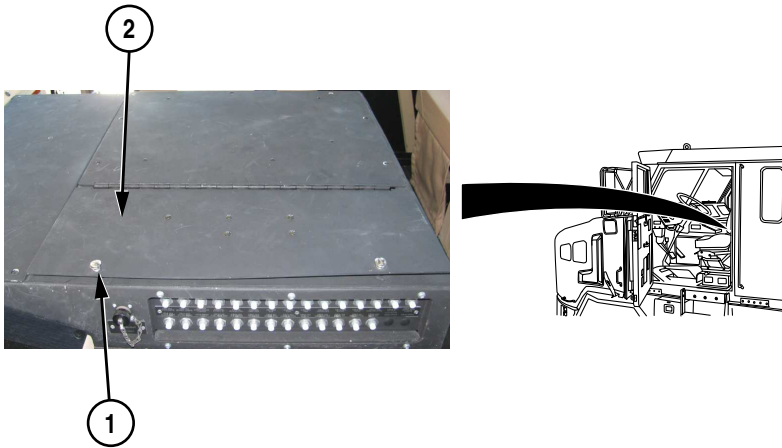


*Figure 1. Opening Cab Control Box (CCB) Panel.*

#### END OF TASK

#### CLOSING CAB CONTROL BOX (CCB) PANEL

Close cab control box panel (2) and tighten two screws (1).

**CLOSING CAB CONTROL BOX (CCB) PANEL - Continued**

*Figure 2. Closing Cab Control Box (CCB) Panel.*

**END OF TASK**

**FOLLOW-ON MAINTENANCE**

Remove wheel chocks. (WP 0036)

**END OF TASK**

**END OF WORK PACKAGE**

---

## OPERATOR MAINTENANCE OPEN/CLOSE HEATER VALVES

---

### INITIAL SETUP:

#### Equipment Condition

Engine OFF. (WP 0050)

#### Equipment Condition (cont.)

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

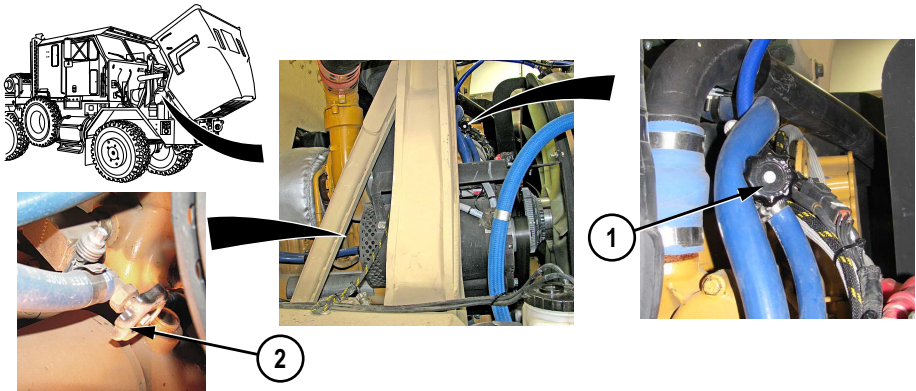
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### OPEN HEATER VALVES

#### NOTE

Heater valves must be open for cab heat to function.

1. Set up and install personnel ladder on passenger side front fender. (WP 0055)
2. Turn heater supply hose heater valve handle (1) fully counterclockwise to open valve.



*Figure 1. Open Heater Valves.*

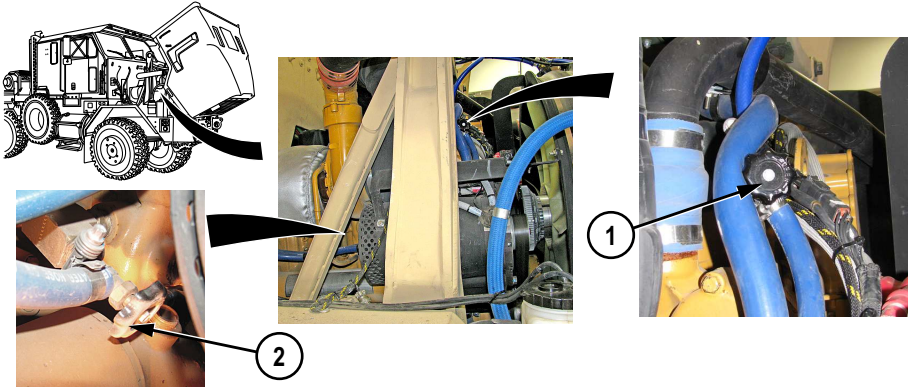
3. Turn heater return hose heater valve handle (2) fully counterclockwise to open valve.
4. Remove and stow personnel ladder. (WP 0055)

### END OF TASK

**CLOSE HEATER VALVES****NOTE**

Heater valves can be closed to perform maintenance on cab heater unit or to increase effectiveness of cab air conditioning.

1. Set up and install personnel ladder on passenger side front fender. (WP 0055)
2. Turn heater supply hose heater valve handle (1) fully clockwise to close valve.



*Figure 2. Close Heater Valves.*

3. Turn heater return hose heater valve handle (2) fully clockwise to close valve.
4. Remove and stow personnel ladder. (WP 0055)

**END OF TASK****FOLLOW-ON MAINTENANCE**

Remove wheel chocks.

**END OF TASK****END OF WORK PACKAGE**

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## OPERATOR MAINTENANCE DRAIN AIR SYSTEM PRESSURE TO ZERO

---

### INITIAL SETUP:

#### Equipment Condition

Engine OFF. (WP 0050)

#### Equipment Condition (cont.)

Parking brake applied. (WP 0049)

Wheels chocked. (WP 0036)

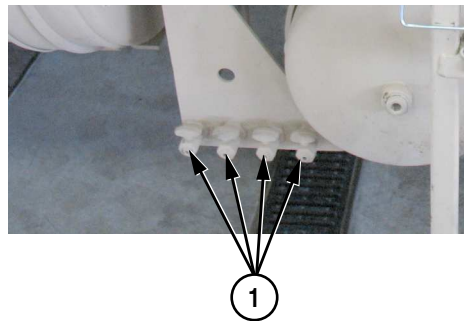
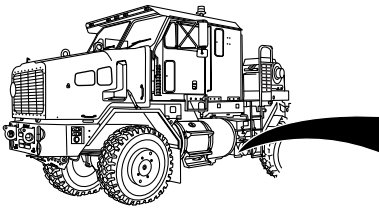
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### DRAINING

#### WARNING

Air drain valves may be under extreme pressure. Keep face away from air drain valves while draining air reservoirs. Open air drain valves slowly to prevent sudden blast of air. Failure to comply may result in serious injury or death to personnel.

1. Open four air drain valves (1) and allow air to drain from system.



*Figure 1. Drain Air Pressure to Zero.*

2. Close four air drain valves (1) after all air is drained from system.

### END OF TASK

**FOLLOW-ON MAINTENANCE**

Remove wheel chocks. (WP 0036)

**END OF TASK****END OF WORK PACKAGE**

---

## OPERATOR MAINTENANCE PRIMING FUEL SYSTEM

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### INITIAL SETUP:

#### Tools and Special Tools

Goggles, Industrial (WP 0138, Table 2)  
Wrench, Adjustable, 8 in. (WP 0137, Table 3, Item 46)

#### Equipment Condition

Hood Opened. (WP 0129)

#### Materials/Parts

Rag, Wiping (WP 0139, Table 1, Item 44)

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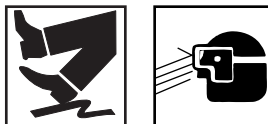
### PRIMING FUEL SYSTEM

#### WARNING



Fuel is very flammable and can explode easily. Keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited when engine is hot. When working with fuel, wear proper eye protection and rubber gloves. Post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE. Failure to comply may result in serious injury or death to personnel.

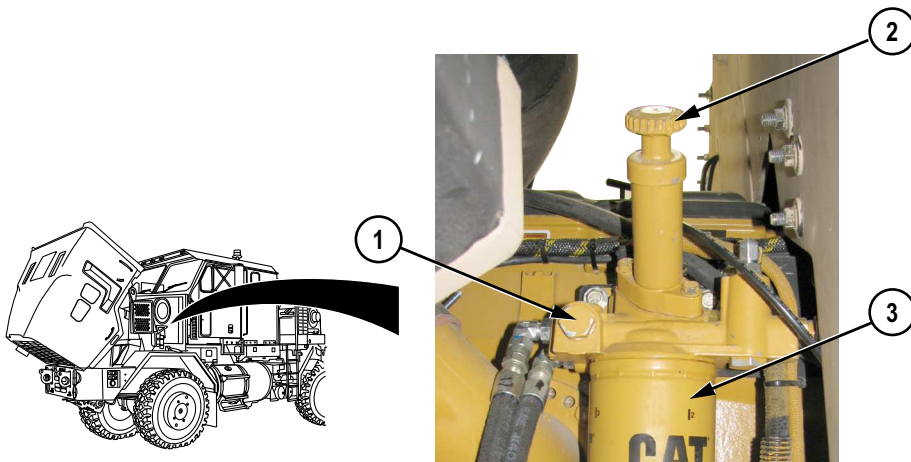
#### WARNING



Fuel, oil, and antifreeze are slippery and can cause falls. To avoid injury, wipe up spilled fuel or oil with a clean cloth and wear proper eye protection. Failure to comply may result in serious injury or death to personnel.

**PRIMING FUEL SYSTEM - Continued**

1. Set up and install personnel ladder on driver side front fender. (WP 0055)
2. Loosen air bleed plug (1) three full turns counterclockwise. Do not remove air bleed plug.



*Figure 1. Priming Fuel System.*

3. Turn knob (2) counterclockwise until knob (2) can be pulled out.
4. Push and pull knob (2) on priming pump (3) until fuel appears at air bleed plug (1).

**NOTE**

Wipe any excess fuel with rag.

5. Tighten air bleed plug (1).
6. Push and pull knob (2) until strong resistance is felt.

**CAUTION**

Fuel priming pump knob must be in locked position prior to starting engine. Failure to comply may result in damage to equipment.

7. Push knob (2) in and turn clockwise until locked.

**CAUTION**

If engine fails to start within 15 seconds, release ENGINE START switch and allow starter motor to cool at least two minutes before trying again. Failure to comply may result in damage to equipment.



**PRIMING FUEL SYSTEM - Continued****NOTE**

If vehicle does not start after three attempts, contact field level maintenance.

8. Attempt to start engine. (WP 0045) If engine fails to start or does not operate smoothly for more than 30 seconds, repeat Steps (1) through (6) up to three times in total.
9. Remove and stow personnel ladder. (WP 0055)

**END OF TASK****FOLLOW-ON MAINTENANCE**

Close hood. (WP 0129)

**END OF TASK****END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE SERVICE AIR FILTER ELEMENT

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### INITIAL SETUP:

#### Materials/Parts

Rag, Wiping (WP 0139, Table 1, Item 44)

#### Equipment Condition

Hood Opened. (WP 0129)

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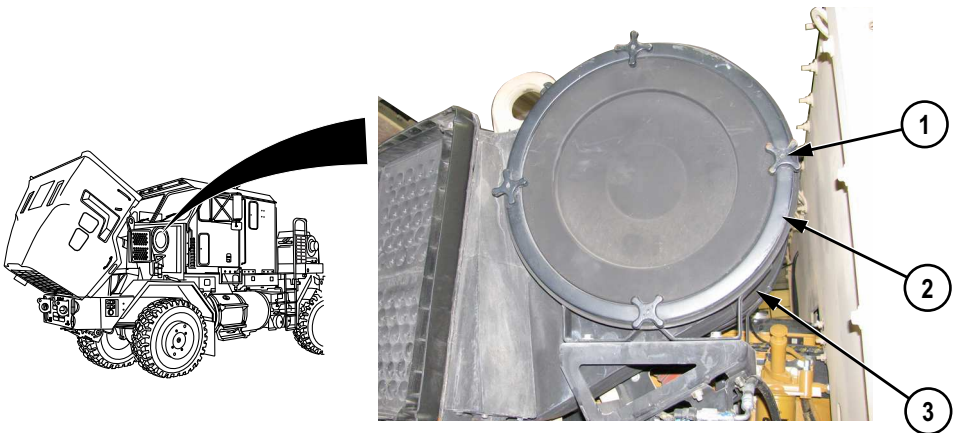
### REMOVAL

1. Setup and install personnel ladder on driver side front fender.

### CAUTION

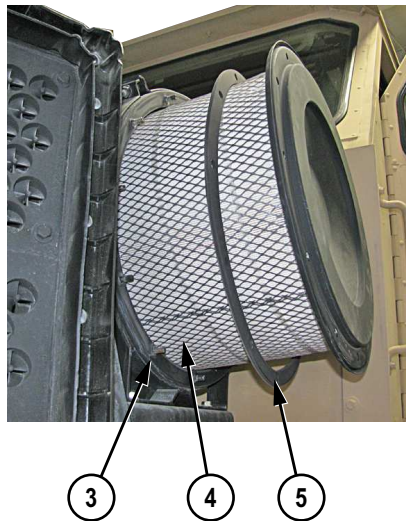
Do not run engine after air filter is removed. Failure to comply may result in damage to equipment.

2. Turn four hand knobs (1) counterclockwise to loosen and remove air filter element retainer ring (2) from air cleaner assembly (3).



*Figure 1. Remove Air Filter Element.*

3. Remove air filter element (4) and gasket (5) from air cleaner assembly (3).

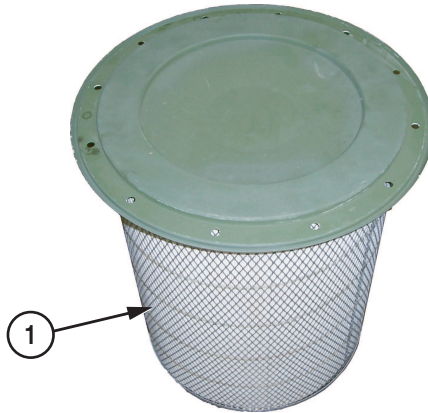
**REMOVAL - Continued**

*Figure 2. Remove Air Filter Element.*

**END OF TASK****CLEANING****NOTE**

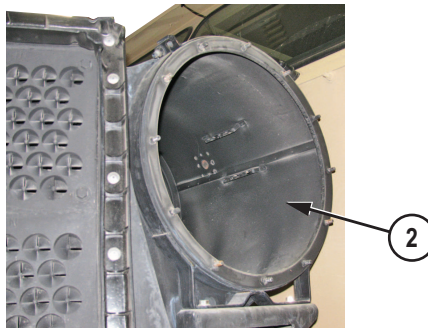
Notify field level maintenance if air filter element is damaged or cannot be cleaned by tapping.

1. Tap side of air filter element (1) lightly against hand.

**CLEANING - Continued**

*Figure 3. Clean Air Filter Element.*

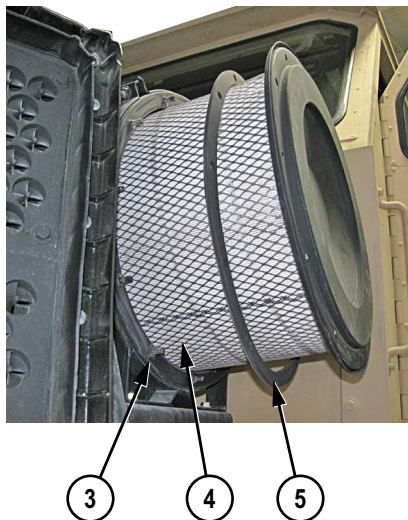
2. Dump out dirt and dust from air filter element (1).
3. Wipe air filter element (1) with clean rag.
4. Wipe inside of air cleaner assembly (2) with clean rag.



*Figure 4. Clean Air filter Element.*

**END OF TASK****INSTALLATION**

1. Install gasket (5) and air filter element (4) in air cleaner assembly (3).

**INSTALLATION - Continued**

*Figure 5. Install Air Filter Element.*

**NOTE**

Repeat hand-tightening sequence at least two times or until no further hand-tightening is possible.

2. Install air filter element retainer ring (2) on air cleaner assembly (3) and turn four hand knobs (1) clockwise until hand-tight.

## INSTALLATION - Continued

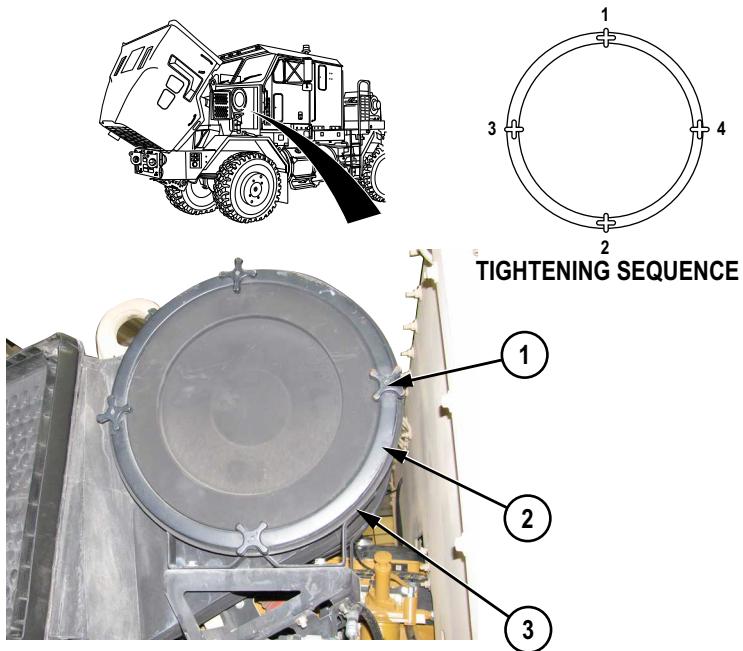


Figure 6. Install Air Filter Element.

3. Start engine. (WP 0045)
4. Press and release RESET button (6) to reset AIR FILTER RESTRICTION indicator (7):

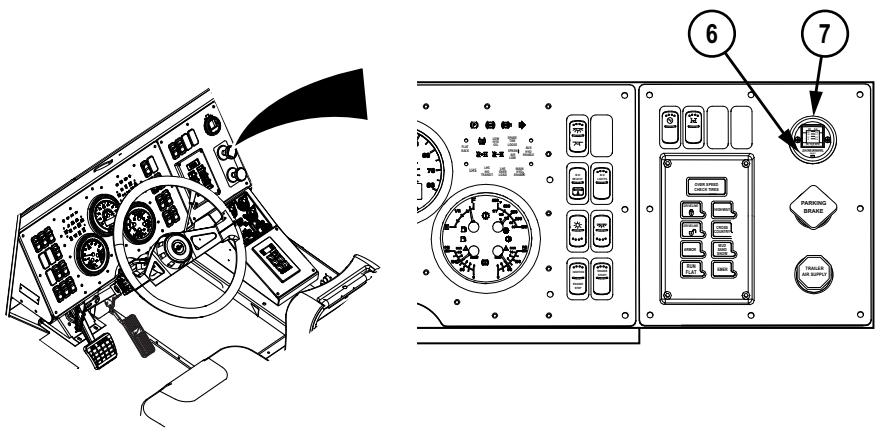


Figure 7. Install Air Filter Element.

**INSTALLATION - Continued**

- a. If AIR FILTER RESTRICTION indicator (7) reads VACUUM INCHES H2O above 22 (5.5 kPa), notify field level maintenance as soon as possible.
  - b. If AIR FILTER RESTRICTION indicator (7) reads VACUUM INCHES H2O below 22 (5.5 kPa), continue to Step (5).
5. Stow personnel ladder.
  6. Shut OFF engine. (WP 0050)

**END OF TASK****FOLLOW-ON MAINTENANCE**

Close hood. (WP 0129)

**END OF TASK****END OF WORK PACKAGE**



## **CHAPTER 6**

### **SUPPORTING INFORMATION**



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## FIELD MAINTENANCE REFERENCES

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### SCOPE

This work package lists all pamphlets, forms, field manuals, technical manuals, and other publications referenced in this manual. Also, those publications that should be consulted for additional information about vehicle operations are listed.

### DEPARTMENT OF ARMY PAMPHLETS

DA PAM 25-30	Consolidated Index of Army Publications and Blank Forms
DA PAM 750-8	The Army Maintenance Management System (TAMMS) Users Manual
DA PAM 738-751	Functional Users Manual for the Army Maintenance Management System (TAMMS-A)

### FORMS

DA FORM 2028	Recommended Changes to Publications and Blank Forms
DA FORM 2404	Equipment Inspection and Maintenance Worksheet
DA FORM 2407	Maintenance Request
DA FORM 2408-9	Equipment Control Record
STANDARD FORM 368	Product Quality Deficiency Report
DD FORM 250	Material Inspection and Receiving Report
DD FORM 1149	Requisition and Invoice/Shipping Document
DD FORM 1348-1	DOD Single Line Item Release/Receipt Document
DD FORM 1397	Processing and Deprocessing Record for Shipping, Storage, and Issue of Vehicles and Spare Engines
DA FORM 2407-1	Maintenance Request Continuation Sheet

**FORMS - Continued**

DA FORM 2402	Maintenance Exchange Tag
DA FORM 2062	Hand Receipt
DA FORM 5504	Maintenance Request
DA FORM 5504-1	Maintenance Request Continuation Sheet
DA FORM 5988-E	Equipment Maintenance and Inspection Worksheet
SF 361	Transportation Discrepancy Report
SF 364	Report of Discrepancy (ROD)
SF 4895	Equipment Preservation Data Sheet (EPDS)

**FIELD MANUALS**

FM 3-11.4	Multiservice Tactics, Techniques, and Procedures For Nuclear, Biological, and Chemical (NBC) Protection
FM 3-11.5	Multiservice Tactics, Techniques, and Procedures For Chemical, Biological, Radiological, and Nuclear Decontamination
FM 4-25.11	First Aid
FM 4-30.31	Recovery and Battle Damage Assessment and Repair
FM 9-207	Operation and Maintenance of Ordnance Materiel in Cold Weather
FM 21-10	Field Hygiene and Sanitation
FM 21-40	Nuclear, Biological, and Chemical (NBC) Defense
FM 31-70	Basic Cold Weather Manual
FM 31-71	Northern Operations
FM 55-21	Railway Operating and Safety Rules
FM 90-3	Desert Operations

**TECHNICAL BULLETINS**

TB ORD 1030	Army Vehicles Installation and use of Overhaul and Overhaul/MWO Plates
TB 9-2300-281-35	Standards for Oversea Shipment or Domestic Issue of Special Purpose Vehicles, Combat, Tactical, Construction, and Selected Industrial and Troop Support U.S. Army Tank-Automotive Materiel Readiness Command Managed Items
TB 9-2300-422-20	Security of Tactical Wheeled Vehicles
TB 9-2320-360-13 & P-2	Operator's, Unit and Direct Support Maintenance Manual, Installation Instructions, and Repair Parts and Special Tools Lists (RPSTL) for Crew Protection Kit for Truck, Tractor, M1070P1, 8 x 8 Heavy Equipment Transporter (HET)
TB 43-0001-62-SERIES	Equipment Improvement Report and Maintenance Digest for Tank, Automotive, Armament and Chemical Equipment
TB 43-0142	Safety Inspection and Testing of Lifting Devices
TB 43-0209	Color, Marking and Camouflage Painting of Military Vehicles, Construction Equipment, and Materials Handling Equipment
TB 43-0212	Purging, Cleaning, and Coating Interior Ferrous and Terne Sheet Vehicle Fuel Tanks
TB 43-0216	Safety and Hazard Warnings for Operation and Maintenance of TACOM Equipment
TB 750-651	Use of Antifreeze Multi-Engine Type Cleaning Compounds and Test Kit in Engine Cooling Systems
TB 9-289	Reconditioning of Type I and Type II Reusable Metal Containers

**TECHNICAL MANUALS**

TM 3-4230-214-12&P	Operator's and Unit Maintenance Manual Including Repair Parts and Special Tools List for Decontamination Apparatus
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**TECHNICAL MANUALS - Continued**

TM 3-4240-280-10	Operator's Manual for Mask, Chemical-Biological: Aircraft, ABC-M24 and Accessories and Mask, Chemical-Biological, Tank, M25A1 and Accessories
TM 3-6665-225-12	Operator's and Organizational Maintenance Manual for Alarm Chemical
TM 9-214	Inspection, Care and Maintenance of Antifriction Bearings
TM 9-243	Use and Care of Hand Tools and Measuring Tools
TM 9-1005-245-13&P	Operator's, Unit, and Direct Support Maintenance Manual with Repair Parts and Special Tools List (RPSTL) for Machine Gun Mounts and Combinations for Tactical/Armored Vehicles
TM 9-1440-600-10	Operator's Manual for Launching Station, Guided Missile, Semitrailer Mounted M901 Patriot Air Defence Guided Missile System
TM 9-2320-360-10-HR	Hand Receipt Manual for Truck, Tractor, M1070, 8x8, Heavy Equipment Transporter
TM 9-2320-427-10-HR	Hand Receipt Manual for Truck, Tractor, M1070 A1, 8x8, Heavy Equipment Transporter
TM 9-2610-200-14	Operator's, Unit, Direct Support, and General Support Maintenance Manual for Care, Maintenance, Repair, and Inspection of Pneumatic Tires and Inner Tubes
TM 9-2330-366-14&P	Operator's, Organizational, Direct Support, and General Support Maintenance Manual Including Repair Parts and Special Tools List For Semitrailer, Lowbed, 12-Ton, XM974 (NSN 2330-01-116-0288)
TM 9-4910-571-12&P	Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools List) for Simplified Test Equipment for Internal Combustion Engines (STE/ICE-R)
TM 9-4910-783-13&P	Operator's, Unit, and Direct Support Maintenance Manual (Including Repair Parts

**TECHNICAL MANUALS - Continued**

	and Special Tools List) for Standard Automotive Test Set (SATS)
TM 9-4940-468-13	Operator's, Unit, and Direct Support Maintenance Manual for Tool Outfit, Hydraulic Systems Test and Repair Unit (HSTRU)
TM 9-4940-568-10	Operator's Maintenance Manual for Forward Repair System (FRS)
TM 9-6140-200-14	Operator's, Unit, Direct Support and General Support Maintenance Manual for Lead-Acid Storage Batteries
TM 9-8000	Principles of Automotive Vehicles
TM 11-5820-498-12	Operator's and Organizational Maintenance Manual: Radio Sets
TM 11-5820-498-35	Direct Support, General Support, and Depot Maintenance Manual for Radio Sets
TM 38-250	Preparing Hazardous Materials for Military Air Shipments
TM 43-0139	Painting Instructions for Army Materiel
TM 43-0158	General Shop Practice Requirements for the Repair, Maintenance, and Test of Electrical Equipment - Cadmium Batteries
TM 55-2200-001-12	Transportability Guidance for Application of Blocking, Bracing and Tiedown Materials for Rail Transport
TM 750-244-3	Procedures for Destruction of Equipment to Prevent Enemy Use (Mobility Equipment Command)
TM 750-244-6	Procedures for Destruction of Tank Automotive Equipment to Prevent Enemy Use (U.S. Army Tank-Automotive Command)
TM 750-254	Cooling Systems: Tactical Vehicles
TM 5-2330-378-14&P	Operator's, Unit, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Semitrailer, Lowbed: 40-Ton Construction Equipment Transporter, M870, and M870A1

**TECHNICAL MANUALS - Continued**

TM 5-2330-325-14&P	Operator's, Unit, and Direct Support Maintenance Manual with Repair Parts and Special Tools List (RPSTL) for Trailer, Medium Heavy Equipment Transporter (MHET), 40-Ton, M870A3
TM 9-2330-213-14&P	Operator's, Unit, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools Lists) For Trailer, Chassis: 1-1/2-Ton, 2-Wheel M103A1 (NSN 2330-00-835-8629) M103A3 (NSN 2330-00-141-8052) Trailer, Cargo: 1-1/2-Ton, 2-Wheel M105A1 (NSN 2330-00-835-8631) M105A2 (NSN 2330-00-141-8050) M105A2C (NSN 2330-00-542-5689) Trailer, Tank, Water: 1-1/2-Ton, 2-Wheel, 400-Gallon M107A1 (NSN 2330-00-835-8633) M107A2 (NSN 2330-00-141-8049) M107A2C (NSN 2330-00-542-5688) Trailer, Van, Shop: Folding Sides, 1-1/2-Ton, 2-Wheel M448 (NSN 2330-00-631-5692)
TM 9-2330-231-14&P	Operator's, Organizational, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools List) Trailer, Ammunition: 1 1/2-Ton, 2-Wheel, M332 (NSN 2330-00-200-1785)
TM 9-2330-368-14&P	Operator's, Field and Sustainment Maintenance Manual, Including Repair Parts and Special Tools List For Trailer, Ammunition, Heavy Expanded Mobility, 11-Ton, M989 (NSN 2330-01-109-4258)
TM 9-2330-381-13	Operator's and Field Maintenance Manual for Semitrailer, Transporter, Heavy Equipment, 70 ton, M1000
TM 9-6140-200-14	Operator's Unit, Direct Support and General Support Maintenance Manual for Lead-Acid Storage Batteries
TM 11-5820-401-10-1	Operator's Manual for Radio Sets AN/VRC-12 (NSN 5820-00-223-7412), AN/VRC-43 (5820-00-223-7415), AN/VRC-44 (5820-00-223-7417), AN/VRC-45



**TECHNICAL MANUALS - Continued**

	(5820-00-223-7418), AN/VRC-46 (5820-00-223-7433), AN/VRC-47 (5820-00-223-7434), AN/VRC-48 (5820-00-223-7435), and AN/VRC-49 (5820-00-223-7437); (used without intercom systems)
TM 11-5820-890-10-1	Operator's Manual for SINCGARS Ground Combat Net Radio, ICOM Manpack Radio AN/PRC-119A (NSN 5820-01-267-9482) (L2Q), Short Range Vehicular Radio AN/VRC-87A (5820-01-267-9480), Short Range Vehicular Radio with Single Radio Mount AN/VRC-87C (5820-01-304-2045) (GDC), Short Range Vehicular Radio with Dismount AN/VRC-88A (5820-01-267-9481) (L23), Short Range Vehicular Radio with Dismount and Single Radio Mount AN/VRC-88C (5820-01-304-2044) (GDD), Short Range/Long Range Vehicular Radio AN/VRC-89A (5820-01-267-9479)

**MISCELLANEOUS PUBLICATIONS**

AGMA 1010-E95	Appearance of Gear Teeth - Terminology of Wear and Failure
AR 200-1	Environmental Protection and Enhancement
AR 385-10	Army Safety Program
AR 700-139	Army Warranty Program
AR 750-1	Army Materiel Maintenance Policy
AR 750-10	Army Modification Program
MIL-PRF-680B	Solvent Cleaning Compound Specifications
MIL-S-3785 (series)	Starters Engine, Electrical, 24-Volt D.C.
MIL-STD-3003 (series)	Vehicles, Wheeled: Preparation For Shipment and Storage of
TC 9-237	Operator's Circular Welding Theory and Application
TC 21-305-20	Manual for the Wheeled Vehicle Operator

**MISCELLANEOUS PUBLICATIONS - Continued**

TO 00-25-234

General Shop Practice Requirements for  
Repair, Maintenance, and Test of Electrical  
Equipment

**END OF WORK PACKAGE**

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## **OPERATOR MAINTENANCE COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS**

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### **INTRODUCTION**

#### **Scope**

This work package lists COEI and BII for the M1070A1 Heavy Equipment Transporter (HET) Tractor to help you inventory items required for safe and efficient operation.

#### **General**

The Components of End Item and Basic Issue Items Lists are divided into the following lists:

#### **Components of End Item (COEI)**

This listing is for informational purposes only and is not authority to requisition replacements. These items are part of the M1070A1 HET Tractor. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and separately packaged for transportation or shipment only when necessary. Illustrations are furnished to help you find and identify the items.

#### **Basic Issue Items (BII)**

These are the minimum essential items required to place the M1070A1 HET Tractor in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the M1070A1 HET Tractor during operation and when it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on your authorization of the end item by the TOE/MTOE. Illustrations are furnished to help you find and identify the items.

#### **Explanation of Entries in the COEI List and BII List**

The following provides an explanation of columns found in the tabular listings:

##### **Column (1) Item Number.**

Gives you the reference number of the item listed.

##### **Column (2) National Stock Number (NSN) and Illustration.**

Identifies the stock number of the item to be used for requisitioning purposes and provides an illustration of the item.

**INTRODUCTION - Continued**

**Column (3) Description, Part Number/Commercial and Government Entity Code.**

Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The stowage location of COEI and BII is also included in this entry. The last line below the description is the part number and the CAGEC (in parentheses).

**Column (4) Usable On Code (UOC).**

When applicable, gives you a code if the item you need is not the same for different models of equipment. These codes are identified below:

**Table 1. List of Usable On Codes**

Code	Used On
HA1	Truck, Tractor, M1070 A1

**Column (5) Unit of Issue (U/I).**

Unit of Issue (U/I) indicates the physical measurement or count of the item as issued per the NSN shown in column (2).

**Column (6) Qty Rqr.**

Indicates the quantity required.

**COMPONENTS OF END ITEM**

Table 2. Components of End Item

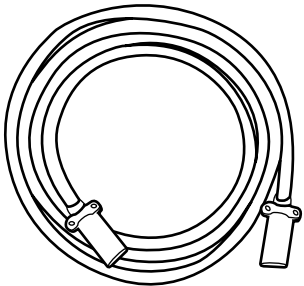
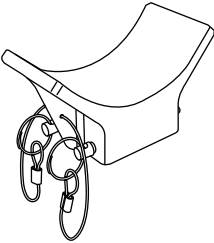
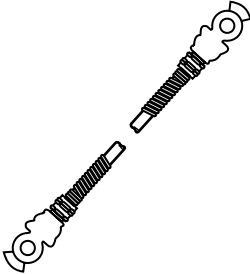
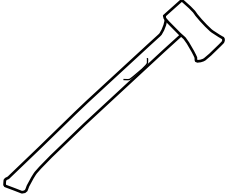
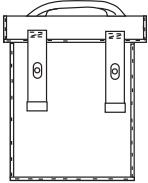
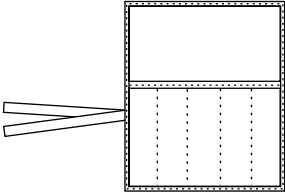

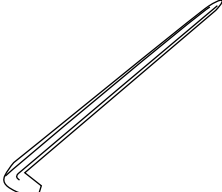
(1)  ITEM NO.	(2)  NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3)  DESCRIPTION, PART NUMBER/(CAGEC)	(4)  USABLE ON CODE	(5)  U/I	(6)  QTY RQR
1	5995-00-772-8813  	CABLE, INTERVEHICULAR 12- PIN, 24-VOLT ( WP 0140)) 7728813(19207)		EA	1


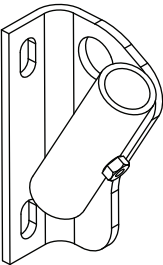
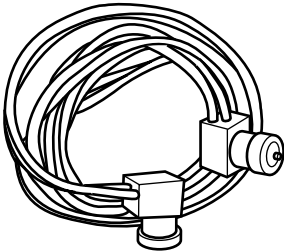
Table 3. Basic Issue Items

(1)  ITEM NO.	(2)  NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3)  DESCRIPTION, PART NUMBER/(CAGEC)	(4)  USABLE ON CODE	(5)  U/I	(6)  QTY RQR
1	5120-01-422-8775  	SADDLE, JACK, TOP ( WP 0140)) 2067070(45152)		EA	1
2	4720-01-254-0189  	HOSE ASSEMBLY, NONMETALLIC: Intervehicular ( WP 0140)) MS39325-9-140- B(96906)		EA	2
3	5110-00-293-2336  	AXE, SINGLE BIT ( WP 0140)) 6150925(19207)		EA	1

**Table 3. Basic Issue Items - Continued**

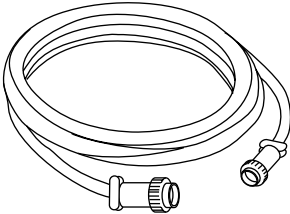
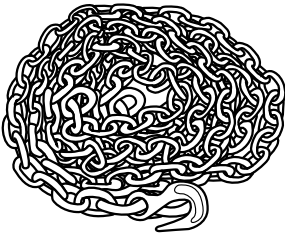
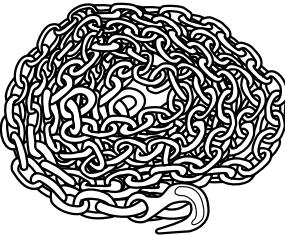
(1) ITEM NO.	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
4	8105-01-353-2497 	BAG, PAMPHLET ( WP 0140) 1362710(45152)		EA	1
5	5140-01-167-1541 	BAG, TOOL ( WP 0140) 1350190(45152)		EA	1
6	2590-01-578-5483 	BANNER, OVERSIZE LOAD ( WP 0140) 472-10151(1HYT0)		EA	1
7	5120-00-224-1389 	BAR, PRY, 15 IN. ( WP 0140) B107.60(05047)		EA	1

**Table 3. Basic Issue Items - Continued**

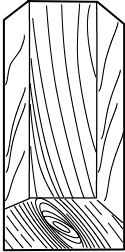
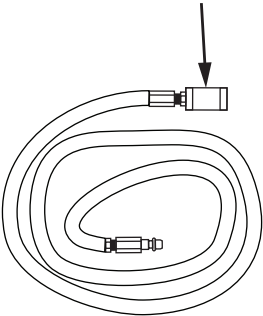

(1) ITEM NO.	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
8	7510-00-889-3494 	BINDER, LOOSE- LEAF ( (WP 0140)) 11677003(19207)		EA	1
9	5340-01-578-4167 	BRACKET, MOUNTING: FLAG WELDMENT ( (WP 0140)) 3830565(45152)		EA	2
10	6150-01-022-6004 	CABLE, SLAVE, NATO ( (WP 0140)) 11682336-1(19207)		EA	1



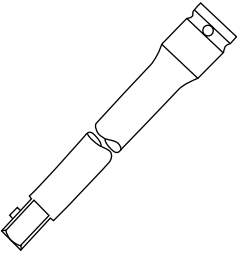
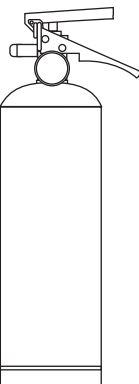

**Table 3. Basic Issue Items - Continued**

(1) ITEM NO.	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
11	6150-01-353-3201 	CABLE, TRAILER LIGHT, 7-PIN, 12- VOLT ( (WP 0140)) 1304090(45152)		EA	1
12	4010-01-351-5676 	CHAIN, UTILITY, 7/8 IN. X 20 FT ( (WP 0140)) 1839610(45152)		EA	1
13	4010-01-249-0548 	CHAIN, UTILITY, 5/8 X 14 FT ( (WP 0140)) 00044-9973(80535)		EA	1

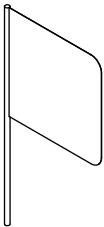
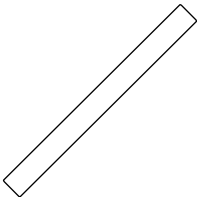
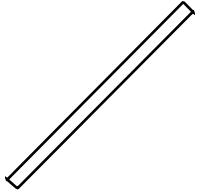
**Table 3. Basic Issue Items - Continued**

(1) ITEM NO.	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
14	2540-01-165-6136 	CHOCK, WHEEL (four total: two located in both (WP 0140) and (WP 0140) wheel chock stowage boxes) CS-2540-0067(16236)		EA	4
15	4370-01-341-2410 	COUPLING HALF, QUICK DISCONNECT (reference only: subassembly of HOSE ASSEMBLY, AIR, 60 FT (Table 3, Item 26)) FD40-1013-06-06(01 276)		EA	1
16	3830-01-478-8769 	COVER, AUXILIARY WINCH ( (WP 0140)) 2084960(0NPD5)		EA	1

**Table 3. Basic Issue Items - Continued**

(1) ITEM NO.	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
17	5130-01-400-0129 	EXTENSION, WRENCH, 13 IN. ( WP 0140)) 07569(1CV05)		EA	1
18	4210-00-165-4703 	FIRE EXTINGUISHER, WITH BRACKET ( WP 0140)) AA393-A1B(58536)		EA	1
19	6545-00-922-1200 	FIRST AID KIT, GENERAL PURPOSE ( WP 0140)) 11677011(19207)		EA	1

**Table 3. Basic Issue Items - Continued**

(1) ITEM NO.	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
20	5340-01-578-4167 	FLAG, 18X18 in. ( WP 0140) 3830565(45152)		EA	2
21	5340-01-209-7841 	HANDLE, EXTENSION ( WP 0140) 1347720(45152)		EA	1
22	5120-01-423-6463 	HANDLE, HYDRAULIC JACK, 40 IN. ( WP 0140) 2073170(45152)		EA	1

**Table 3. Basic Issue Items - Continued**

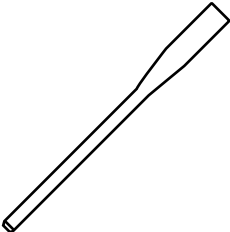
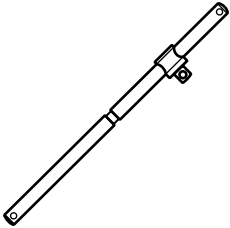
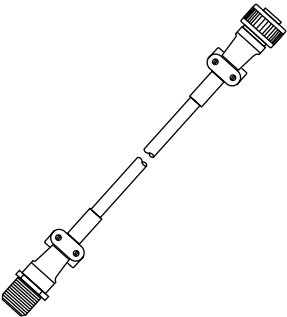
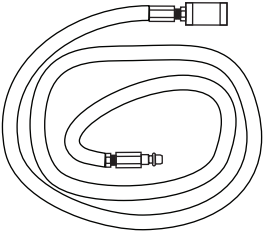
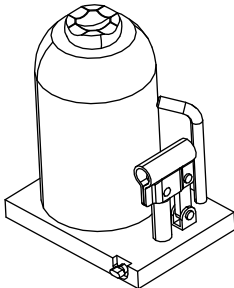
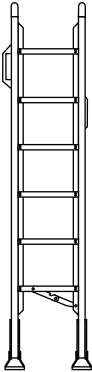


(1) ITEM NO.	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
23	5120-00-288-6574 	HANDLE, MATTOCK PICK ( (WP 0140)) 5120-00-288-6574(80 244)		EA	1
24	5120-01-242-7218 	HANDLE, SLIDING, 3/4 IN. SQUARE DRIVE ( (WP 0140)) B107.10(05047)		EA	1
25	6210-01-354-5929 	HARNESS, WORKLAMP ( (WP 0140)) 1858760(45152)		EA	2

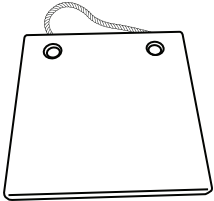
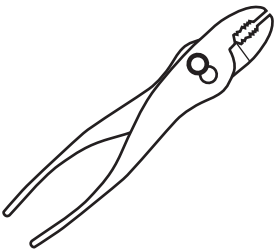

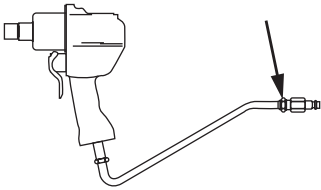
Table 3. Basic Issue Items - Continued

(1)  ITEM NO.	(2)  NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3)  DESCRIPTION, PART NUMBER/(CAGEC)	(4)  USABLE ON CODE	(5)  U/I	(6)  QTY RQR
26	4720-01-386-3455  	HOSE ASSEMBLY, AIR, 60 FT ( (WP 0140)) FK1780GGG7200AA( 01276)		EA	1
27	5120-01-146-8096  	HYDRAULIC JACK, 12T, TELESCOPIC ( (WP 0140)) 28961(63704)		EA	1

**Table 3. Basic Issue Items - Continued**

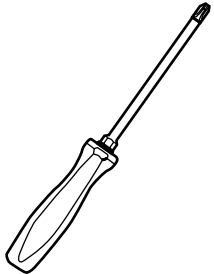
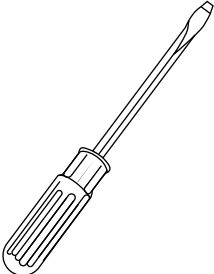
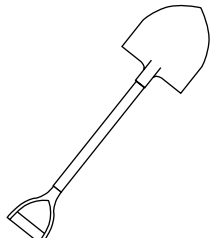
(1) ITEM NO.	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
28	5440-01-342-0700 	LADDER ( (WP 0140)) 2019940(45152)		EA	1
29	5120-00-243-2395 	MATTOCK, PICK TYPE, 5 LB ( (WP 0140)) 5120-00-243-2395(80 244)		EA	1
30	5340-01-468-5390 	PADLOCK SET (set of five locks keyed alike; two located on (WP 0140), one located on (WP 0140) one located on (WP 0140) stowage box, and one located on (WP 0140)) 3698013(45152)		SE	1

**Table 3. Basic Issue Items - Continued**

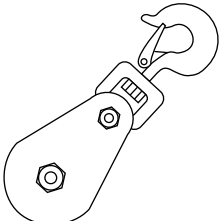
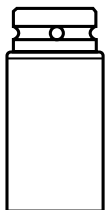

(1) ITEM NO.	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
31	5340-01-350-0872 	PLATE, JACK, BASE ( WP 0140)) 1731070(45152)		EA	1
32	5120-01-480-0640 	PLIERS, 10 IN., ADJUSTABLE JOINT ( WP 0140)) 1350150(45152)		EA	1
33	4730-01-578-6396 	PLUG, LIMP HOME ( WP 0140)) KV2P-19(55470)		EA	2
34	4370-00-289-0232 	REDUCER, PIPE (reference only: subassembly of WRENCH, AIR- POWERED, 3/4 IN. SQUARE DRIVE (Table 3, Item 48) air line) 216P-6-4(93061)		EA	1



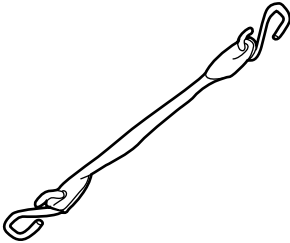
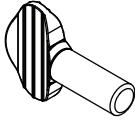
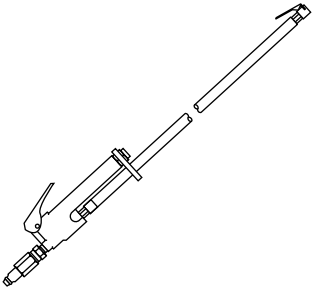
**Table 3. Basic Issue Items - Continued**

(1) ITEM NO.	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
35	5120-01-398-8053 	SCREWDRIVER, CROSS-TIP, 10 IN. ( WP 0140)) SDFP56(96508)		EA	1
36	5120-00-293-3309 	SCREWDRIVER, STANDARD, 10 IN. ( WP 0140)) B107.15(05047)		EA	1
37	5120-01-515-7117 	SHOVEL, D-HANDLE, ROUND POINT ( WP 0140)) 3453866(45152)		EA	1

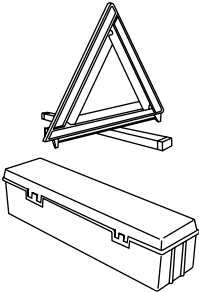
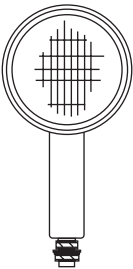
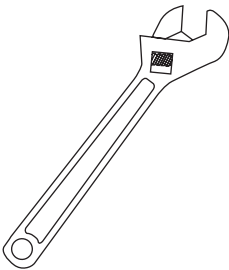
**Table 3. Basic Issue Items - Continued**

(1) ITEM NO.	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
38	3940-01-353-2214 	SNATCH BLOCK ( (WP 0140)) 420000(95975)		EA	1
39	5130-00-541-7839 	SOCKET, IMPACT, 1-1/2 in. ( (WP 0140)) B107.2(05047)		EA	1
40	5130-01-366-0376 	SOCKET, IMPACT, 33 MM ( (WP 0140)) B107.33(05047)		EA	1

**Table 3. Basic Issue Items - Continued**

(1) ITEM NO.	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
41	5340-01-231-6015 	STRAP, RETAINING, RUBBER ( (WP 0140)) 2025(60648)		EA	1
42	5305-01-578-5770 	THUMBSCREW (reference only: subassembly of BRACKET, MOUNTING: FLAG WELDMENT (Table 3, Item 9)) 3830707(45152)		EA	2
43	4910-01-386-4300 	TIRE INFLATOR/ GAUGE ( (WP 0140)) I-405M(63900)		EA	1

**Table 3. Basic Issue Items - Continued**

(1) ITEM NO.	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
44	9905-01-480-0644 	WARNING DEVICE KIT ( (WP 0140)) 64326BX(45152)		EA	1
45	6320-01-578-3595 	WORK LIGHT, PORTABLE, LED ( (WP 0140)) 1403042(78422)		EA	2
46	5120- 01-436-2924 	WRENCH, ADJUSTABLE, 8 IN. ( (WP 0140)) AC18(96508)		EA	1

**Table 3. Basic Issue Items - Continued**

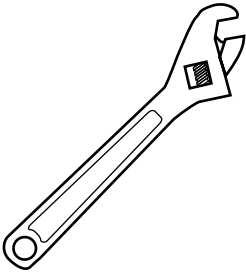
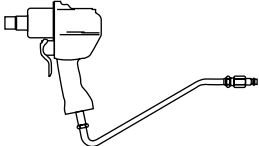
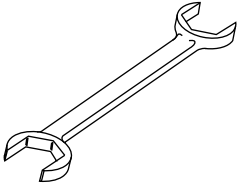
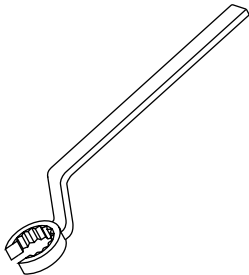
(1) ITEM NO.	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
47	5120-00-264-3796 	WRENCH, ADJUSTABLE, 12 IN. ( WP 0140)) B107.8(05047)		EA	1
48	5130-01-428-3751 	WRENCH, AIR- POWERED, 3/4 IN. SQUARE DRIVE ( WP 0140)) 1789100U(45152)		EA	1
49	5120-01-373-8833 	WRENCH, OPEN END ( WP 0140)) BW-731A(8Z799)		EA	1

Table 3. Basic Issue Items - Continued

(1)  ITEM NO.	(2)  NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3)  DESCRIPTION, PART NUMBER/(CAGEC)	(4)  USABLE ON CODE	(5)  U/I	(6)  QTY RQR
50	5120-01-387-0055  	WRENCH, TUBE, 3/4 IN. ( WP 0140)) 2022970(45152)		EA	1

END OF WORK PACKAGE

OPERATOR MAINTENANCE  
ADDITIONAL AUTHORIZATION LIST (AAL)

Introduction

Scope

This work package lists additional authorization items that are needed to operate and maintain the Heavy Equipment Transporter (HET) Tractor.

General

This list identifies items that do not have to accompany the HET Tractor and that do not have to be turned in with it. These items are all authorized to you by Common Table of Allowance (CTA), Modified Tables of Organization and Equipment (MTOE), Tables of Distribution and Allowance (TDA), or Joint Table of Allowances (JTA).

Explanation of Columns in the AAL

Column (1) - National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (2) - Description, Part Number/(CAGEC). Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

Column (3) - Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment.

Table 1. List of Usable On Codes.

Code	Used On
HA1	Truck, Tractor, M1070 A1

Column (4) - U/I. Unit of Issue (U/I) indicates the physical measurement or count of the item as issued per the National Stock Number.

Column (5) - Qty Recm. Indicates the quantity recommended.

**Table 2. Additional Authorization List.**

(1)	(2)	(3)	(4)	(5)
NATIONAL STOCK NUMBER (NSN)	DESCRIPTION, PART NUMBER/(CAGEC)	USABLE ON CODE	U/I	QTY RECO M
6665-01-581-0435	ALARM, BIOLOGICAL- CHEMICAL AGENTS, AUTOMATIC 3821328(45152)	HA1	EA	1
2540-01-152-7813	CHAIN, TIRE, EMERGENCY 2624-10-8(46156)	HA1	PR	2
4230-01-220-3221	DECONTAMINATION KIT, INDIVIDUAL EQUIPMENT: M13 5705588(19207)	HA1	EA	1
4240-01-581-0434	FILTER ASSEMBLY, GAS: GAS PARTICULATE KIT 3789653(45152)	HA1	EA	1
8415-00-634-4658	GLOVES, LEATHER A-A-50021(58536)	HA1	PR	2
4240-00-203-3804	GOGGLES, INDUSTRIAL ANSI Z87.1(80204)	HA1	PR	1
2990-01-583-9089	M12 EMI ARCTIC HEATER KIT, ENGINE 3815131(45152)	HA1	KT	1
5120-00-278-9926	MIRROR, INSPECTION 5120-00-278-9926(80244)	HA1	EA	1
3940-01-209-6008	SLING AND WIRE ROPE ASSEMBLY SET AC 2000 00331(94658)	HA1	SE	1

**END OF WORK PACKAGE**



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## OPERATOR MAINTENANCE EXPENDABLE AND DURABLE ITEMS LIST

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### Introduction

### Scope

This work package lists expendable supplies and materials that are needed to operate and maintain the HET Series Vehicles. This list is for information only and is not authority to requisition the listed items. These items are authorized by CTA 50-970, Expendable/Durable Items (Except Medical, Class V Repair Parts, and Heraldic Items), CTA 50-909, Field and Garrison Furnishings and Equipment or CTA 8-100, Army Medical Department Expendable/Durable Items.

### Explanation of Entries in the Expendable/Durable Items List

#### Item No.

This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., Use brake fluid (Expendable/Durable Items List)).

#### Level.

This column identifies the lowest level of maintenance that requires the listed item.

- C = Operator/Crew
- F = Maintainer or ASB
- H = General Support or TASMG
- D = Depot

#### National Stock Number (NSN).

This is the NSN assigned to the item which you can use to requisition it.

#### Item Name, Description, Part Number/(CAGEC).

This column provides the other information you need to identify the item. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

#### (U/I).

Unit of Issue (U/I) code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

**Table 1. Expendable and Durable Items List**

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER/(CAGEC)	(5) U/I
<b>Antifreeze, Arctic Type</b>				
1	O	6850-01-464-9096	Antifreeze, Arctic Type 55-gal drum A-A-52624 (58536)	DR
<b>Antifreeze, Permanent, Glycol, Inhibited</b>				
2	O	6850-01-464-9125	Antifreeze, Permanent, Glycol, Inhibited 1-gal container AA52624 (58536)	GL
3	O	6850-01-464-9137	Antifreeze, Permanent, Glycol, Inhibited 5-gal container MILA46153 (81349)	CO
4	O	6850-01-464-9152	Antifreeze, Permanent, Glycol, Inhibited 55-gal drum A-A-52624 TY I RECYCLED (58536)	DR
<b>Chips, Soap, P-S-579</b>				
5	O	7930-00-634-3935	Chips, Soap, P-S-579 200-pound drum ASTM D 496 (81346)	DR
6	O	7930-00-579-8532	Chips, Soap, P-S-579 100-pound drum P-S-1792 (81348)	DR
<b>Cleaning Compound, Solvent</b>				
7	O	6850-01-474-2319	Cleaning Compound, Solvent 1 gallon can MIL-PRF-680 Type II (81349)	GL
8	O	6850-01-474-2317	Cleaning Compound, Solvent 5 gallon can MIL-PRF-680 Type II (81349)	CO
9	O	6850-01-474-2316	Cleaning Compound, Solvent 55 gallon drum MIL-PRF-680 Type II (81349)	DR
10	O	6850-01-474-2318	Cleaning Compound, Solvent 1 gallon can MIL-PRF-680 Type III (81349)	GL

**Table 1. Expendable and Durable Items List - Continued**

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER/(CAGEC)	(5) U/I
11	O	6850-01-474-2320	Cleaning Compound, Solvent 5 gallon can MIL-PRF-680 Type III (81349)	BX
12	O	6850-01-474-2321	Cleaning Compound, Solvent 5 gallon can MIL-PRF-680 Type III (81349)	DR
<b>Compound, Cleaning Windshield</b>				
13	O	6850-00-926-2275	Compound, Cleaning Windshield 1-pt can 0854-000 (0FTT5)	BX
<b>Fuel, DF-1, Winter</b>				
14	O	9140-00-286-5286	Fuel, DF-1, Winter Bulk ASTM D 975 (81346)	GL
15	O	9140-00-286-5287	Fuel, DF-1, Winter 5-gal can ASTM D 975 (81346)	CN
16	O	9140-00-286-5288	Fuel, DF-1, Winter 55-gal drum, 16 gauge ASTM D 975 (81346)	DR
<b>Fuel</b>				
17	O	9140-00-286-5294	Fuel, DF-2, Regular Bulk ASTM D 975 (81346)	GL
18	O	9140-00-286-5295	Fuel, DF-2, Regular 5-gal can ASTM D 975 (81346)	CN
19	O	9140-00-286-5296	Fuel, DF-2, Regular 55-gal drum, 16 gauge ASTM D 975 (81346)	DR
<b>Grease, Automotive and Artillery GAA</b>				
20	O	9150-01-197-7689	Grease, Automotive and Artillery GAA 5- lb can M-10924-D (81349)	CN
21	O	9150-01-197-7692	Grease, Automotive and Artillery GAA 35-lb can M-10924-E (81349)	CN

**Table 1. Expendable and Durable Items List - Continued**

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER/(CAGEC)	(5) U/I
22	O	9150-01-197-7691	Grease, Automotive and Artillery GAA 120-lb drum M-10924-F (81349)	DR
<b>Hydraulic Fluid, Petroleum Base (Radcolube RHP6083)</b>				
23	O	9150-00-935-9807	Hydraulic Fluid, Petroleum Base (Radcolube RHP6083) 1-qt can AVERX904 (77988)	QT
24	O	9150-00-935-9809	Hydraulic Fluid, Petroleum Base (Radcolube RHP6083) 5-gal can AVERX904 (77988)	CN
25	O	9150-00-935-9810	Hydraulic Fluid, Petroleum Base (Radcolube RHP6083) 55-gal drum AVERX904 (77988)	DR
<b>Oil, Lubricating Gear, GO 75</b>				
26	O	9150-01-035-5390	Oil, Lubricating Gear, GO 75 1-qt can M2105-1-75W (81349)	QT
27	O	9150-01-035-5391	Oil, Lubricating Gear, GO 75 55-gal drum M2015-3-75W (81349)	CN
<b>Oil, Lubricating, Gear GO 80/90 (MIL-L-2105C)</b>				
28	O	9150-01-035-5393	Oil, Lubricating, Gear GO 80/90 (MIL- L-2105C) 5-gal can MIL-L-2105 (81349)	CN
29	O	9150-01-035-5394	Oil, Lubricating, Gear GO 80/90 (MIL- L-2105C) 55-gal drum MIL-L-2105 (81349)	DR
<b>Oil, Lubricating OEA Ice, Subzero</b>				
30	O	9150-00-402-2372	Oil, Lubricating OEA Ice, Subzero 5-gal can MIL-PRF-46167 (81349)	CN
31	O	9150-00-491-7197	Oil, Lubricating OEA Ice, Subzero 55-gal drum, 16 gauge MIL-PRF-46167 (81349)	DR
<b>Oil, Lubricating OE/HDO 10</b>				

**Table 1. Expendable and Durable Items List - Continued**

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER/(CAGEC)	(5) U/I
32	O	9150-01-518-9471	Oil, Lubricating OE/HDO 10 1-qt can M2104-1-10W (81349)	QT
33	O	9150-00-186-6668	Oil, Lubricating OE/HDO 10 5-gal can M2104-3-10W (81349)	CN
34	O	9150-00-191-2772	Oil, Lubricating OE/HDO 10 55-gal drum, 18 gauge M2104-4-10W (81349)	DR
<b>Oil, Lubricating OE/HDO 30, (SAE 30)</b>				
35	O	9150-00-186-6681	Oil, Lubricating OE/HDO 30, (SAE 30) 1- qt can M2104-1-30W (81349)	QT
36	O	9150-00-188-9858	Oil, Lubricating OE/HDO 30, (SAE 30) 5- gal can M2104-3-30W (81349)	CN
37	O	9150-00-189-6729	Oil, Lubricating OE/HDO 30, (SAE 30) 55-gal drum, 18 gauge M2104-4-30W (81349)	DR
<b>Oil, Lubricating, Internal Combustion Engine, Tactical Service OE/HDO 15W40 (MIL-L-2104)</b>				
38	O	9150-01-421-1424	Oil, Lubricating, Internal Combustion Engine, Tactical Service OE/HDO 15W40 (MIL-L-2104) 5-gal can MIL-PRF-2104 (81349)	CN
39	O	9150-01-421-1432	Oil, Lubricating, Internal Combustion Engine, Tactical Service OE/HDO 15W40 (MIL-L-2104) 55-gal drum M2104-5-15W/40 (81349)	DR
<b>Oil, Lubricating, OE/HDO 40</b>				
40	O	9150-00-188-9862	Oil, Lubricating, OE/HDO 40 55-gal drum 40 GRADE (81343)	DR
<b>Oil, Lubricating, Gear GO 85W/140 (MIL-L-2105)</b>				

**Table 1. Expendable and Durable Items List - Continued**

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER/(CAGEC)	(5) U/I
41	O	9150-01-035-5395	Oil, Lubricating, Gear GO 85/140 (MIL-L-2105) 5-gallon can J2360 (81343)	CN
42	O	9150-01-035-5396	Oil, Lubricating, Gear GO 85/140 (MIL-L-2105) 55-gallon drum J2360 (81343)	DR
<b>Plug, Ear or Equivalent</b>				
43	O	6515-00-442-4821	Plug, Ear or Equivalent 28-14-01 (0VTP4)	PG
<b>Rag, Wiping</b>				
44	O	7920-00-205-1711	Rags, Wiping 50-pound bale 7920-00-205-1711 (80244)	BE

**END OF WORK PACKAGE**

## OPERATOR MAINTENANCE ON-VEHICLE EQUIPMENT LOADING PLAN

### SCOPE

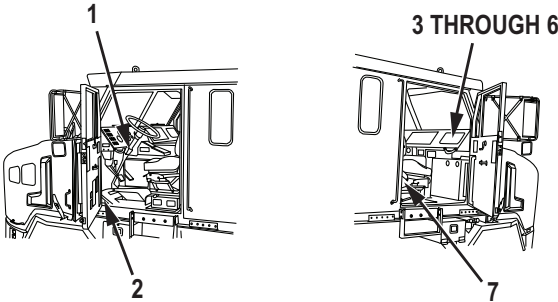
This appendix shows stowage locations for equipment necessary to support the Heavy Equipment Transporter (HET) Tractor.

### GENERAL

Stowage locations are given for equipment that must accompany the HET Tractor at all times. The following equipment is covered in this appendix:

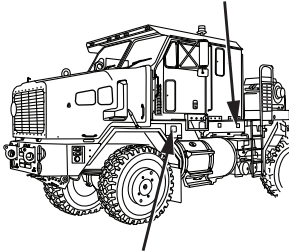
### ON-VEHICLE EQUIPMENT LOADING PLAN

**Table 1. On-Vehicle Equipment Loading Plan.**

 <p style="text-align: center;">Figure 1. Cab.</p>		
NO.	ITEM	LOCATION
1	Padlock (WP 0137, Table 3, Item 30) (2)	Steering Column Lock Pin
2	Fire Extinguisher (WP 0137, Table 3, Item 18)	Under Dash Panel, Driver Side
3	Binder, Loose-Leaf (WP 0137, Table 3, Item 8)	Glove Box

ON-VEHICLE EQUIPMENT LOADING PLAN - Continued

Table 1. On-Vehicle Equipment Loading Plan - Continued.

4	Bag, Pamphlet (WP 0137, Table 3, Item 4)	
5	Hand Receipt, Truck, Tractor, M1070 A1	
6	Operator's Manual, Truck, Tractor, M1070 A1	
7	First Aid Kit, General Purpose (WP 0137, Table 3, Item 19)	Passenger Side Cab Wall (Rear Seat)
<div>12 THROUGH 47</div> <div></div> <div>8 THROUGH 11</div> <div>Figure 2. Driver Side.</div>		
NO.	ITEM	LOCATION
8	Chain, Utility, 5/8 in. x 14 ft (16 mm x 4.3 m) (WP 0137, Table 3, Item 13)	Driver Side Tool Box
9	Harness, Worklamp (WP 0137, Table 3, Item 25) (2)	
10	Padlock (WP 0137, Table 3, Item 30)	
11	Work Light, Portable LED (WP 0137, Table 3, Item 45) (2)	
12-13	Adapter: Saddle, Jack, Top (WP 0137, Table 3, Item 1) Includes:	Driver Side Stowage Box



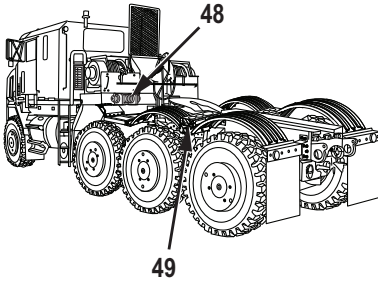
**ON-VEHICLE EQUIPMENT LOADING PLAN - Continued*****Table 1. On-Vehicle Equipment Loading Plan - Continued.***

	Pin, Adapter (2)
14	Axe, Single Bit (WP 0137, Table 3, Item 3)
15-20	Bag, Tool (WP 0137, Table 3, Item 5) includes: <ul style="list-style-type: none"> <li>• Pliers, 10 in., Adjustable Joint (WP 0137, Table 3, Item 32)</li> <li>• Screwdriver, Cross-Tip, 10 in. (WP 0137, Table 3, Item 35)</li> <li>• Screwdriver, Standard, 10 in. (WP 0137, Table 3, Item 36)</li> <li>• Wrench, Adjustable, 8 in. (WP 0137, Table 3, Item 46)</li> <li>• Wrench, Adjustable, 12 in. (WP 0137, Table 3, Item 47)</li> </ul>
21	Banner, Oversize Load (WP 0137, Table 3, Item 6)
22	Bar, Pry, 15 in. (38 cm) (WP 0137, Table 3, Item 7)
23-24	Bracket, Mounting: Flag Weldment (WP 0137, Table 3, Item 9) (2) Includes: Thumbscrew (WP 0137, Table 3, Item 42) (2)
25	Cable, Slave, NATO (WP 0137, Table 3, Item 10)
26	Extension, Wrench, 13 in. (33 cm) (WP 0137, Table 3, Item 17)
27	Flag, 18x18 in. (WP 0137, Table 3, Item 20) (2)
28	Handle, Extension (WP 0137, Table 3, Item 21)

**ON-VEHICLE EQUIPMENT LOADING PLAN - Continued*****Table 1. On-Vehicle Equipment Loading Plan - Continued.***

29	Handle, Hydraulic Jack (WP 0137, Table 3, Item 22)
30	Handle, Mattock Pick (WP 0137, Table 3, Item 23)
31	Handle, Sliding, 3/4 in. Square Drive (WP 0137, Table 3, Item 24)
32	Hose Assembly, Air, 60 ft. (18 m) (WP 0137, Table 3, Item 26)
33	Hydraulic Jack, 12T, Telescopic (WP 0137, Table 3, Item 27)
34	Mattock, Pick-Type, 5 lb. (2.3 kg) (WP 0137, Table 3, Item 29)
35	Padlock (WP 0137, Table 3, Item 30)
36	Plate, Jack, Base (WP 0137, Table 3, Item 31)
37	Plug, Limp Home (WP 0137, Table 3, Item 33) (2)
38	Shovel, D-Handle, Round Point (WP 0137, Table 3, Item 37)
39	Snatch Block (WP 0137, Table 3, Item 38)
40	Socket, Impact, 1.5 in. (38 mm) (WP 0137, Table 3, Item 39)
41	Socket, Impact, 33 mm (1.3 in.) (WP 0137, Table 3, Item 40)
42	Strap, Retaining, Rubber (WP 0137, Table 3, Item 41)

**ON-VEHICLE EQUIPMENT LOADING PLAN - Continued****Table 1. On-Vehicle Equipment Loading Plan - Continued.**

43	Tire Inflator/Gauge (WP 0137, Table 3, Item 43)	
44	Warning Device Kit (WP 0137, Table 3, Item 44)	
45	Wrench, Air-Powered, 3/4 in. Square Drive (WP 0137, Table 3, Item 48)	
46	Wrench, Open End (WP 0137, Table 3, Item 49)	
47	Wrench, Tube, 3/4 in. (WP 0137, Table 3, Item 50)	
 <p style="text-align: center;"><i>Figure 3. Driver Side.</i></p>		
48	Cover, Auxiliary Winch (WP 0137, Table 3, Item 16)	Auxiliary Winch
49	Chock, Wheel (WP 0137, Table 3, Item 14) (2)	Driver Side Wheel Chock Box

ON-VEHICLE EQUIPMENT LOADING PLAN - Continued

Table 1. On-Vehicle Equipment Loading Plan - Continued.

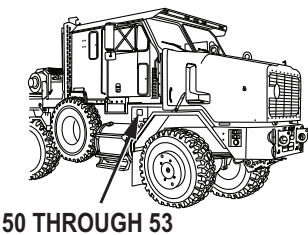


Figure 4. Passenger Side.

NO.	ITEM	LOCATION
50	Cable, Trailer Light, 7-Pin, 12-Volt (WP 0137, Table 3, Item 11)	
51	Chain, Utility, 7/8 in. x 20 ft. (22 mm x 6.1 m) (WP 0137, Table 3, Item 12)	
52	Hose Assembly, Nonmetallic: Intervehicular (WP 0137, Table 3, Item 2) (2)	
53	Padlock (WP 0137, Table 3, Item 30)	

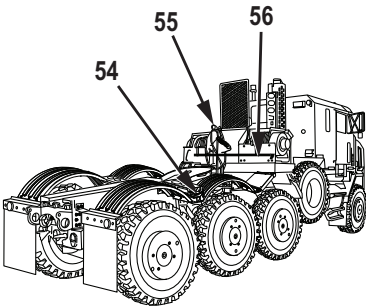


Figure 5. Passenger Side.

**ON-VEHICLE EQUIPMENT LOADING PLAN - Continued*****Table 1. On-Vehicle Equipment Loading Plan - Continued.***

54	Chock, Wheel (WP 0137, Table 3, Item 14) (2)	Passenger Side Wheel Chock Box
55	Cable, Intervehicular, 12-Pin, 24-Volt (WP 0137, Table 2, Item 1)	Pogo Stick
56	Ladder (WP 0137, Table 3, Item 28)	Winch Deck

**END OF WORK PACKAGE**



<b>RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS</b> For use of this form, see AR 25-30; the proponent agency is ODISC4.						Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).		DATE Date you filled out this form.	
TO: (Forward to proponent of publication or form) (Include ZIP Code) U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 1 Rock Island Arsenal, Rock Island, IL 61299-7630						FROM: (Activity and location) (Include ZIP Code)  Your mailing address			
<b>PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS</b>									
PUBLICATION/FORM NUMBER TM 9-2320-427-10						DATE 31 January 2011		Title Heavy Equipment Transporter, M1070A1, Operator's Manual	
ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON (Provide exact wording of recommended changes, if possible).			
	0004-2	4-7				Wrong POC is listed.			
<div>SAMPLE</div>									
*Reference to line numbers within the paragraph or subparagraph.									
TYPED NAME, GRADE OR TITLE  Your Name						TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION		SIGNATURE  Your Signature	

<b>TO: (Forward direct to addressee listed in publication)</b> U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 1 Rock Island Arsenal, Rock Island, IL 61299-7630				<b>FROM: (Activity and location) (Include ZIP Code)</b>  Your address				<b>DATE</b> Date you filled out this form	
<b>PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS</b>									
PUBLICATION NUMBER TM 9-2320-427-10				DATE 31 January 2011			TITLE Heavy Equipment Transporter, M1070A1, Operator's Manual		
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION	
								SAMPLE	
<b>PART III – REMARKS</b> (Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)									
TYPED NAME, GRADE OR TITLE  Your Name				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION				SIGNATURE  Your Signature	



<b>RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS</b> For use of this form, see AR 25-30; the proponent agency is ODISC4.						Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).		DATE	
TO: (Forward to proponent of publication or form)(Include ZIP Code)  U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 1 Rock Island Arsenal, Rock Island, IL 61299-7630						FROM: (Activity and location) (Include ZIP Code)			
PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS									
PUBLICATION/FORM NUMBER TM 9-2320-427-10						DATE 31 January 2011		TITLE Heavy Equipment Transporter, M1070A1, Operator's Manual	
ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON (Provide exact wording of recommended changes, if possible).			
*Reference to line numbers within the paragraph or subparagraph.									
TYPED NAME, GRADE OR TITLE					TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION			SIGNATURE	

TO: (Forward direct to addressee listed in publication) U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 1 Rock Island Arsenal, Rock Island, IL 61299-7630					FROM: (Activity and location) (Include ZIP Code)			DATE	
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By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.  
*General, United States Army*  
*Chief of Staff*

Official:

A handwritten signature in black ink, reading "Joyce E. Morrow". The signature is written in a cursive style with a large, stylized "J" and "M".

JOYCE E. MORROW  
*Administrative Assistant to the*  
*Secretary of the Army*  
1025001

DISTRIBUTION: To be distributed in accordance with the initial distribution requirements for IDN:386944, requirements for TM 9-2320-427-10.



THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches  
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches  
1 Kilometer = 1000 Meters = 0.621 Miles

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches  
1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet  
1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces  
1 Kilogram = 1000 Grams = 2.2 Lb  
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches  
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces  
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

TEMPERATURE

$5/9 (F - 32) = C$   
212 Fahrenheit is equivalent to 100 Celsius  
90 Fahrenheit is equivalent to 32.2 Celsius  
32 Fahrenheit is equivalent to 0 Celsius  
 $9/5 C + 32 = F$

APPROXIMATE CONVERSION FACTORS

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Inches . . . . .	Centimeters . . . . .	2.540
Feet . . . . .	Meters . . . . .	0.305
Yards . . . . .	Meters . . . . .	0.914
Miles . . . . .	Kilometers . . . . .	1.609
Square Inches . . . . .	Square Centimeters . . . . .	6.451
Square Feet . . . . .	Square Meters . . . . .	0.093
Square Yards . . . . .	Square Meters . . . . .	0.836
Square Miles . . . . .	Square Kilometers . . . . .	2.590
Acres . . . . .	Square Hectometers . . . . .	0.405
Cubic Feet . . . . .	Cubic Meters . . . . .	0.028
Cubic Yards . . . . .	Cubic Meters . . . . .	0.765
Fluid Ounces . . . . .	Milliliters . . . . .	29.573
Pints . . . . .	Liters . . . . .	0.473
Quarts . . . . .	Liters . . . . .	0.946
Gallons . . . . .	Liters . . . . .	3.785
Ounces . . . . .	Grams . . . . .	28.349
Pounds . . . . .	Kilograms . . . . .	0.454
Short Tons . . . . .	Metric Tons . . . . .	0.907
Pound-Feet . . . . .	Newton-Meters . . . . .	1.356
Pounds/Sq Inch . . . . .	Kilopascals . . . . .	6.895
Miles per Gallon . . . . .	Kilometers per Liter . . . . .	0.425
Miles per Hour . . . . .	Kilometers per Hour . . . . .	1.609

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Centimeters . . . . .	Inches . . . . .	0.394
Meters . . . . .	Feet . . . . .	3.280
Meters . . . . .	Yards . . . . .	1.094
Kilometers . . . . .	Miles . . . . .	0.621
Sq Centimeters . . . . .	Square Inches . . . . .	0.155
Square Meters . . . . .	Square Feet . . . . .	10.764
Square Meters . . . . .	Square Yards . . . . .	1.196
Square Kilometers . . . . .	Square Miles . . . . .	0.386
Sq Hectometers . . . . .	Acres . . . . .	2.471
Cubic Meters . . . . .	Cubic Feet . . . . .	35.315
Cubic Meters . . . . .	Cubic Yards . . . . .	1.308
Milliliters . . . . .	Fluid Ounces . . . . .	0.034
Liters . . . . .	Pints . . . . .	2.113
Liters . . . . .	Quarts . . . . .	1.057
Liters . . . . .	Gallons . . . . .	0.264
Grams . . . . .	Ounces . . . . .	0.035
Kilograms . . . . .	Pounds . . . . .	2.205
Metrication . . . . .	Short Tons . . . . .	1.102
Newton-Meters . . . . .	Pound-Feet . . . . .	0.738
Kilopascals . . . . .	Pounds per Sq Inch . . . . .	0.145
Km per Liter . . . . .	Miles per Gallon . . . . .	2.354
Km per Hour . . . . .	Miles per Hour . . . . .	0.621

